



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2013-0026]

[4500030113]

1018-AZ48

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Fluted Kidneyshell and Slabside Pearlymussel

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the fluted kidneyshell (*Ptychobranhus subtentum*) and slabside pearlymussel

(*Pleuroaia dolabelloides*) under the Endangered Species Act of 1973, as amended (Act).

These two species are endemic to portions of the Cumberland and Tennessee River systems of Alabama, Kentucky, Mississippi, Tennessee, and Virginia. In total, approximately 2,218 river kilometers (1,380 river miles) in Alabama, Kentucky, Mississippi, Tennessee, and Virginia fall within the boundaries of the critical habitat designation. The effect of this regulation is to designate critical habitat for the fluted kidneyshell and slabside pearlymussel under the Act for the conservation of the species.

DATES: This rule is effective on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

ADDRESSES: This final rule is available on the Internet at <http://www.regulations.gov> and at <http://www.fws.gov/cookeville>. Comments and materials we received, as well as supporting documentation we used in preparing this final rule, are available for public inspection at <http://www.regulations.gov>. All of the comments, materials, and documentation that we considered in this rulemaking are available by appointment, during normal business hours, at: U.S. Fish and Wildlife Service, Tennessee Ecological Services Field Office, 446 Neal Street, Cookeville, TN 38501; 931-528-6481 (telephone); 931-528-7075 (facsimile).

The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2013-0026 and at the

Tennessee Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). Any additional tools or supporting information that we developed for this critical habitat designation will be available at the websites and field office address given above and may also be included in the preamble of this rule.

FOR FURTHER INFORMATION CONTACT: Mary Jennings, Field Supervisor, U.S. Fish and Wildlife Service, Tennessee Ecological Services Field Office, 446 Neal Street, Cookeville, TN 38501; telephone 931–528–6481; facsimile 931–528–7075. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. This is a final rule to designate critical habitat for the fluted kidneyshell (*Ptychobranhus subtentum*) and slabside pearlymussel (*Pleuonaia dolabelloides*). Under the Endangered Species Act (Act), when we determine that a species is endangered or threatened we must designate critical habitat to the maximum extent prudent and determinable. Designations of critical habitat can only be completed by issuing a rule.

Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat on the basis of the best available scientific data after taking into consideration the

economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat.

The areas we are designating in this rule constitute our current best assessment of the areas that meet the definition of critical habitat for the fluted kidneyshell and slabside pearlymussel. Here we are designating approximately 2,218 river kilometers (rkm) (1,380 river miles (rmi)) of stream channel in five States as critical habitat. For the fluted kidneyshell, we are designating 24 units covering approximately 1,899 rkm (1,181 rmi) of critical habitat in Limestone County, Alabama; Jackson, Laurel, McCreary, Pulaski, Rockcastle, and Wayne Counties, Kentucky; Bedford, Claiborne, Cocke, Fentress, Franklin, Giles, Grainger, Greene, Hamblen, Hancock, Hickman, Humphreys, Jefferson, Knox, Lincoln, Marshall, Maury, Moore, Morgan, Overton, Perry, Pickett, Polk, Scott, and Sevier Counties, Tennessee; and Bland, Lee, Russell, Scott, Smyth, Tazewell, Washington, and Wythe Counties, Virginia. For the slabside pearlymussel, we are designating 13 units covering approximately 1,562 rkm (970 rmi) of critical habitat in Colbert, Jackson, Limestone, Madison, and Marshall Counties, Alabama; Tishomingo County, Mississippi; Bedford, Bledsoe, Claiborne, Cocke, Franklin, Giles, Greene, Hamblen, Hancock, Hickman, Humphreys, Lincoln, Marion, Marshall, Maury, Moore, Perry, Polk, and Sequatchie Counties, Tennessee; and Bland, Lee, Russell, Scott, Smyth, Tazewell, Washington, and Wythe Counties, Virginia.

This rule consists of a final rule designating critical habitat for the fluted kidneyshell and slabside pearlymussel. Elsewhere in today's **Federal Register**, we list both species as endangered under the Act.

Peer review and public comment. We sought comments from independent specialists to ensure that our designation is based on scientifically sound data, assumptions, and analyses. We requested opinions from eight knowledgeable individuals with scientific expertise to review our technical assumptions and analysis, and to determine whether or not we used the best available information. Only one of the two peer reviewers who responded commented specifically on the critical habitat designation. This peer reviewer generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve this final rule. Information we received from peer review is incorporated in this final designation. We received three comments from the public regarding the proposed critical habitat designation and the draft economic analysis (DEA). We addressed these comments and incorporated public input into this final designation.

Previous Federal Actions

We proposed listing the fluted kidneyshell and slabside pearlymussel as endangered under the Act with critical habitat on October 4, 2012 (77 FR 60804), and announced the availability of a DEA on April 29, 2013 (78 FR 25041). The final listing rule can be found elsewhere in today's **Federal Register**. All other previous Federal actions for these species are described in the proposed rule (77 FR 60804).

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the fluted kidneyshell and slabside pearlymussel during two comment periods. The first comment period associated with the publication of the proposed rule (77 FR 60804) opened on October 4, 2012, and closed on December 3, 2012. We also requested comments on the proposed critical habitat designation and associated DEA during a comment period that opened on April 29, 2013, and closed on May 29, 2013. We received one request for a public hearing. We held a public hearing in Abingdon, Virginia, on May 14, 2013. We also contacted appropriate Federal, State, and local agencies; scientific experts and organizations; and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in newspapers covering all affected counties in Alabama, Kentucky, Mississippi, Tennessee, and Virginia.

During the first comment period, we received three comment letters directly addressing the proposed critical habitat designation. During the second comment period, we received one comment letter addressing the proposed critical habitat designation or the DEA. During the May 14, 2013, public hearing, one organization made comments on the proposed designation of critical habitat and DEA. All substantive information provided during both comment periods and the public hearing has either been incorporated directly into this final determination or is addressed below.

Peer Reviewer Comments

In accordance with our peer review policy published on July 1, 1994 (59 FR

34270), we solicited expert opinion from eight knowledgeable individuals with scientific expertise that included familiarity with the two mussels and their habitats, biological needs, and threats. We received responses from two of the peer reviewers, but only one of them commented specifically on the proposed critical habitat designation.

We reviewed all comments we received from the peer reviewer for substantive issues and new information regarding the proposed designation of critical habitat for the two mussels. Peer reviewer comments are addressed in Comments 1, 2, and 3 below; addressed in the **Summary of Changes from Proposed Rule** section; and incorporated into the final rule as appropriate.

(1) *Comment:* The *Special Management Considerations or Protection* section fails to list the Tennessee Wildlife Resources Agency (TWRA) mussel sanctuaries located in the Powell, Clinch, Duck, and Hiwassee Rivers as effective conservation measures. The mussel sanctuaries prohibit the taking of mollusks by any means at all times and prohibit the degradation or destruction of aquatic habitat.

Our Response: We agree that the TWRA mussel sanctuaries are protective of the fluted kidneyshell and slabside pearlymussel, and we have incorporated this into the *Special Management Considerations or Protection* section of this final rule.

(2) *Comment:* In several critical habitat unit descriptions, the host fish species for the slabside pearlymussel are identified but not the host fish for the fluted kidneyshell. Host fish for the fluted kidneyshell are also found in these rivers (Nolichucky, Hiwassee, Elk, and Buffalo Rivers).

Our Response: We agree the host fishes for the fluted kidneyshell are found in the Nolichucky (FK18), Hiwassee (FK21), Elk (FK22), and Buffalo (FK24) Rivers.

However, under the Act (16 U.S.C. 1531 *et seq.*) and its implementing regulations, we are only required to identify the physical and biological features (PBFs) essential to the conservation of species in areas *occupied* at the time of listing, focusing on the features' primary constituent elements (PCEs). Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed (i.e., *unoccupied* units), upon a determination that such areas are essential for the conservation of the species. Because units FK21, FK22, and FK24 are unoccupied by the fluted kidneyshell at the time of listing, the presence of the host fishes (a PCE for the fluted kidneyshell) was not considered in the determination of those units and therefore not identified in the unit descriptions. The critical habitat designation for these units is based upon the determination that they are essential for the conservation of the species. However, Unit FK18 has been changed to occupied based on information provided by peer reviewers (see next comment), and the presence of fish hosts for the fluted kidneyshell has been added to the description of Unit FK18 (see **Final Critical Habitat Designation**, below).

(3) *Comment:* The Nolichucky River, Tennessee, Unit FK18 for the fluted kidneyshell, has been proposed as unoccupied critical habitat even though the site retains large numbers of reintroduced adults from stocking efforts over the past 8 years. However, the Duck River has been proposed as occupied based on similar reintroduction efforts. Explain this inconsistency.

Our Response: In the Duck River, the fluted kidneyshell population is a result of a successful reintroduction program implemented by TWRA and other conservation partners, resulting in the recruitment of the species in the river. In 2010, six individuals

were collected during a quantitative survey at Lillard's Mill in the Duck River, confirming some level of survival and persistence of the reintroduced population (Hubbs *et al.* 2011, p. 18).

We had no information at the time of the proposed rule to show that monitoring efforts in the Nolichucky River had confirmed the survival and persistence of reintroduced fluted kidneyshell. Since that time, Hubbs (2012, pers. comm.) confirmed that the Nolichucky River retains a large number of adult individuals. Therefore, we have changed the designation of critical habitat in the Nolichucky River from unoccupied to occupied and revised the designation accordingly.

Federal Agency Comments

(4) *Comment:* The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), in Kentucky, would like to explore opportunities to focus conservation practices including the Wildlife Habitat Incentives Program (WHIP) and the Environmental Quality Incentives Program on water quality improvement and restoration in any areas designated as critical habitat for the fluted kidneyshell and other aquatic organisms.

Our Response: The Service concurs that Farm Bill practices implemented by the NRCS can improve water quality and benefit rare aquatic species. The Service will continue to work with NRCS to identify aquatic habitats for rare aquatic species that would benefit from conservation practices on private lands. One example of a successful partnership between NRCS and the Service's Kentucky Field Office is the Mill Branch Stream Restoration Project in which 700 meters (m) (2,300 feet (ft)) of stream was

completely restored and a fish passage installed to open an additional 1,524 to 2,438 m (5,000 to 8,000 ft) of stream for the federally threatened blackside dace (*Phoxinus [=Chrosomus] cumberlandensis*) in Knox County, Kentucky. This project was completed through the WHIP program.

Public Comments

(5) *Comment:* The Service has failed to prepare a DEA or to announce when the public will have the opportunity to comment on that analysis, hindering the public's ability to meaningfully comment on the complete picture of factors impacting the Service's determination and whether or not the Service has complied with all legal obligations that should shape the final rule.

Our Response: We proposed listing the fluted kidneyshell and slabside pearlymussel as endangered under the Act with critical habitat (77 FR 60804) on October 4, 2012, and announced the availability of a DEA (78 FR 25041) on April 29, 2013. Publication of the DEA after the proposed critical habitat rule is published has been standard practice with critical habitat rules. The Service reopened the comment period for 30 days (through May 29, 2013) to allow comments on the DEA. Additionally, we held a public hearing in Abingdon, Virginia, on May 14, 2013.

(6) *Comment:* During the public hearing, one commenter stated that the DEA is not based on sufficient data and many of the aspects of it appear to be incorrect. The methodology used to reach the estimates is poorly explained and the discount rate selected appears to be too high. The same commenter also stated: "The draft economic analysis did not quantify, quote, indirect economic impacts associated with time delays

and a misperception of the regulatory burden imposed by the proposed critical habitat designation, end quote, because of, quote, a lack of available data, end quote.”

Our Reponse: Our economic analysis is based on the best available data and applies standard methods for assessing the impacts of critical habitat designation. The Office of Management and Budget (OMB) recommends that a 7 percent discount rate be applied as a base case for regulatory analysis (OMB 2003). The DEA and final economic analysis (FEA) also report results using a discount rate of 0 percent and 3 percent for comparison.

There were insufficient data to quantify and monetize indirect economic impacts of the critical habitat designation. These are addressed qualitatively in the analysis to allow the Service to consider these impacts in our determination. Based on our previous data collection, we have included additional information regarding time delays associated with section 7 consultations in the FEA.

(7) *Comment:* During the public hearing, one commenter stated there is no indication in the DEA that the authors consulted with the Virginia Division of Mines, Minerals, and Energy, or with any other coal companies concerning the direct and indirect economic impact of the proposed critical habitat designation on the coal mining industry.

Our Response: The Virginia Division of Mines, Minerals, and Energy declined to provide information for the economic analysis. Phone and e-mail requests for information from the Virginia Coal Association, Virginia Mining Association, and Eastern Coal Council were not returned.

(8) *Comment:* The Service published a proposed rule that had not undergone peer review, thereby not necessarily reflecting sound science, as required by section 4 of the Act and as required under section 515(b)(2)(A) of the Information Quality Act. Rather than conducting peer review prior to publication of the proposed rule, which would allow the public to view a fully scientifically vetted proposal, the Service opted to conduct peer review contemporaneously with the public comment period. Additionally, there is no indication that the public will have an opportunity to review and comment on the rule as informed by peer review, which is troubling due to the Service relying on decades-old data (e.g., concluding a population to be extant if found post-1980).

Our Response: In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from eight knowledgeable individuals with scientific expertise that included familiarity with the two mussels and their habitats, biological needs, and threats. In keeping with our policy, we contacted these peer reviewers after the proposed rule was published in the **Federal Register**. We received responses from two of the peer reviewers. We posted all of the comments we received on the October 4, 2012, proposal to designate critical habitat for the fluted kidneyshell and slabside pearlymussel (77 FR 60804), as well as the document making available the DEA for that proposed action (78 FR 25041; April 29, 2013), on the Internet at <http://www.regulations.gov> under Docket No. FWS-R4-ES-2013-0026.

We reviewed all comments we received from the peer reviewers and others for substantive issues and new information regarding the proposed designation of critical habitat for the two mussels. The peer reviewers generally concurred with our conclusions and provided additional information on taxonomic classification, life history, current

distribution, and threats. Peer reviewer comments are addressed in the *Peer Reviewer Comments* section above, addressed in the **Summary of Changes from Proposed Rule** section below, and incorporated into this final rule as appropriate.

(9) *Comment:* The proposed rule would impose significant and unwarranted regulatory burdens with regard to consultation requirements under section 7 of the Act as they apply to designated critical habitat. Consultation in unoccupied habitats, where there are no specimens of the fluted kidneyshell or slabside pearl mussel, would be unduly burdensome, unwarranted, and unlikely to foster support for the conservation of these species.

Our Response: For the most part, consultation requirements under section 7 of the Act already exist for other listed species throughout the critical habitat designation for the fluted kidneyshell and slabside pearl mussel. Eleven critical habitat units proposed for both the fluted kidneyshell and slabside pearl mussel are currently designated as critical habitat under the Act for other federally listed species. All of the critical habitat units being designated for the fluted kidneyshell and slabside pearl mussel, including the unoccupied units, contain historical or extant records of federally listed or proposed species, except for the Wolf River and Town Branch and West Fork Obey River, Tennessee. Specifically:

- Some streams we are designating as critical habitat that are unoccupied by at least one of the species are occupied either by the other species or by another federally listed mussel species. For instance, the Buffalo River Unit (Unit FK24 and SP13) is

unoccupied critical habitat for the fluted kidneyshell, but is occupied critical habitat for the slabside pearlymussel.

- Some streams we are designating as critical habitat for the fluted kidneyshell and slabside pearlymussel have not been previously designated as critical habitat for other species, but other federally listed species occur in these streams. For instance, the Holston River (Unit FK19) and French Broad River (Unit FK20), which we are designating as unoccupied critical habitat for the fluted kidneyshell, contain other federally listed species such as the pink mucket (*Lampsilis abrupta*).

The Service is designating as critical habitat streams that are outside the geographical area occupied by the species because we have determined that: (1) Such areas are essential for the conservation of the species, and (2) designation of only occupied habitats is not sufficient to conserve these two species. Unoccupied habitats provide additional habitat for population expansion and promotion of genetic diversity, which will decrease the risk of extinction for these two species. As indicated above, the majority of these habitats already possess listed species or their critical habitat, and therefore Federal actions in those areas would require consultation under the Act, regardless of whether or not critical habitat was designated for these two mussels.

Summary of Changes from Proposed Rule

As a result of the comments we received during the public comment periods (see above), we made the following changes to the final critical habitat rule:

(1) We added TWRA mussel sanctuary information to the *Special Management*

Considerations or Protection section.

(2) We changed Unit FK18 (Nolichucky River) from unoccupied to occupied for the fluted kidneyshell to reflect the successful reintroduction program implemented by TWRA and other conservation partners.

(3) In Table 4, we added pink mucket to the list of species that occur in the Holston River (Unit FK19).

(4) We corrected the description for Unit FK19 to reflect that slabside pearl mussel and its host fish are known from the Holston River (not the French Broad River).

(5) We revised the description of Unit FK24 and SP13 (Buffalo River). The channel is not stable, as we stated in the proposed rule, but has destabilized substrates.

While preparing the final critical habitat rule, we also made the following corrections and modifications to Table 3 (Table 5 in the proposed rule):

(1) We corrected the length of overlap for rabbitsfoot (*Quadrula cylindrica cylindrica*) in Unit SP9 (Paint Rock River), Unit SP11 (Bear Creek), and Unit FK23 and SP12 (Duck River).

(2) We calculated total overlap lengths for critical habitat units and nonessential experimental populations (NEPs) separately.

(3) We added a note to clarify how the total overlap lengths were calculated.

In Table 4 (Table 6 in the proposed rule), we made the following corrections to the list of species that occur in critical habitat units:

- (1) We added rough rabbitsfoot (*Q. c. strigillata*) to Unit FK10 (Indian Creek).
- (2) We deleted tan riffleshell (*Epioblasma florentina walkeri* (= *E. walkeri*)) and white wartyback (*Plethobasus cicatricosus*) from Unit FK17 and SP5 (Powell River).
- (3) We added oyster mussel (*E. capsaeformis*) to and deleted pink mucket from Unit FK18 and SP6 (Nolichucky River).
- (4) We added birdwing pearlymussel (*Lemiox rimosus*) and cracking pearlymussel (*Hemistena lata*) to Unit FK20 (French Broad River).
- (5) We added oyster rmussel to Unit SP9 (Paint Rock River).
- (6) We added Alabama lampmussel (*Lampsilis virescens*) and Cumberlandian combshell (*E. brevidens*) to Unit SP11 (Bear Creek) and deleted finereyed pigtoe (*Fusconaia cuneolus*) from the same unit.
- (7) We deleted orangefoot pimpleback (*Plethobasus cooperianus*) from Unit FK23 and SP12 (Duck River).

Background

Critical habitat is defined in section 3 of the Act as:

- (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features
 - (a) Essential to the conservation of the species, and
 - (b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use, and the use of, all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement

reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species, and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features within an area, we focus on the principal biological or physical constituent elements (primary constituent elements such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and may be included in the critical habitat designation. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the

best scientific and commercial data available. Further, our Policy on Information Standards under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded

by the requirement in section 7(a)(2) of the Act for Federal agencies to insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) section 9 of the Act's prohibitions on taking any individual or the species, including taking caused by actions that affect habitat. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of these species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical and Biological Features

In accordance with sections 3(5)(A)(i) and 4(b)(1)(A) of the Act and the regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied at the time of listing to propose as critical habitat, we consider the physical and biological features (PBFs) essential to the conservation of the species that may require special management considerations or protection. These may include, but are not limited to:

- (1) Space for individual and population growth and for normal behavior;
- (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, or rearing (or development) of offspring; and
- (5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derive the specific PBFs required for the fluted kidneyshell and slabside pearl mussel based on their biological needs. Little is known of the specific habitat requirements of these two mussel species other than they require flowing water, stable stream channels, adequate water quality, and fish hosts for development of larva to metamorphose into juvenile mussels. To identify the physical and biological needs of the species, we have relied on current conditions at locations where the species survive, the limited information available on these two mussels and their close relatives, and factors associated with the decline and extirpation of these and other mussels from portions of the Cumberland and Tennessee River systems. Additional information is located in the final listing rule, which can be found elsewhere in today's **Federal Register**. We have determined that the fluted kidneyshell and slabside pearl mussel require the following physical or biological features:

Space for Individual and Population Growth and for Normal Behavior

The fluted kidneyshell and slabside pearl mussel are historically associated with the Cumberland and Tennessee River drainages in Alabama, Kentucky, Mississippi, Tennessee, and Virginia. Mussels generally live embedded in the bottom of stable streams and other bodies of water, and within riffle areas of sufficient current velocities

to remove finer sediments and provide well-oxygenated waters. The fluted kidneyshell is primarily a medium-sized creek to large river species, inhabiting sand and gravel substrates in relatively shallow riffles and shoals with moderate to swift current (Parmalee and Bogan 1998, p. 205). In comparison to co-occurring species, the fluted kidneyshell demonstrates strong habitat specificity. It is associated with faster flows, greater baseflow shear stress, and low substrate embeddedness (Ostby 2005, pp. 51, 142–143). The slabside pearlymussel is primarily a large creek to large river species, inhabiting sand, fine gravel, and cobble substrates in relatively shallow riffles and shoals with moderate current (Parmalee and Bogan 1998, p. 152).

Similar to other mussels, fluted kidneyshell and slabside pearlymussel are dependent on areas with flow refuges where shear stress is relatively low, although the fluted kidneyshell is more tolerant of shear stress than other species (Layzer and Madison 1995, p. 341; Strayer 1999, pp. 468 and 472; Hastie *et al.* 2001, pp. 111–114). Flow refuges conceivably allow relatively immobile mussels such as the fluted kidneyshell and slabside pearlymussel to remain in the same general location throughout their entire lives.

Natural river or creek channel stability is achieved by allowing the river or creek to develop a stable dimension, pattern, and profile such that, over time, channel features are maintained and the river or creek system neither aggrades nor degrades. Channel instability occurs when the scouring process leads to degradation or excessive sediment deposition results in aggradation. Stable rivers and creeks consistently transport their sediment load, both in size and type, associated with local deposition and scour (Rosgen 1996, p. 1–3). Sedimentation has been determined to be a major factor in habitat destruction, resulting in corresponding shifts in mussel fauna (Brim Box and Mossa 1999,

p. 102). Stable stream bottom substrates not only provide space for populations of these mussel species, but also provide cover and shelter and sites for breeding, reproduction, and growth of offspring.

Habitat conditions described in the previous paragraphs provide space, cover, shelter, and sites for breeding, reproduction, and growth of offspring for the fluted kidneyshell and slabside pearlymussel. These habitats are dynamic and are formed and maintained by water quantity, channel features (dimension, pattern, and profile), and sediment input to the system through periodic flooding, which maintain connectivity and interaction with the flood plain. Changes in one or more of these parameters can result in channel degradation or aggradation, with serious effects to mussels.

Therefore, based on the information above, we identify riffles of large creeks and rivers with sand, gravel, and cobble substrates; areas of moderate to high amount of flow, but with refugia of low shear stress; stream channel stability; and floodplain connectivity to be PBFs for both of these species.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Mussels, such as these two species, siphon water into their shells and across four gills that are specialized for respiration, food collection, and brooding larvae in females. Food items include detritus (disintegrated organic debris), algae, diatoms, and bacteria (Strayer *et al.* 2004, pp. 430–431). Encysted glochidia are nourished by their fish hosts and feed for a period of one week to several months. Nutrient uptake by glochidia is not well understood, but probably occurs through the microvillae of the mantle, an umbilical

cord-like structure that is used to extract nutrients as glochidia are attached to gill filaments of host fish. For the first several months, the gills of juvenile mussels are rudimentary and generally incapable of filtering particles (Watters 2007, p. 56). To extract bacteria, algae, and detritus from the sediment, juvenile mussels partially employ pedal (foot) feeding and may filter interstitial (pore) water (Yeager *et al.* 1994, pp. 217–221). Adult mussels primarily filter feed from the ambient water column, but can also obtain their food by deposit feeding, pulling in food from the sediment and its interstitial water and pedal feeding directly from the sediment (Yeager *et al.* 1994, pp. 217–221; Vaughn and Hakenkamp 2001, pp. 1432–1438). Food availability and quality for the fluted kidneyshell and slabside pearlymussel in their habitats are affected by habitat stability, floodplain connectivity, flow, and water and sediment quality. Excessive sedimentation has been shown to impair the filter feeding ability of mussels. When in high silt environments, mussels may keep their valves closed more often, resulting in reduced feeding activity (Ellis 1936, p. 30), and high amounts of suspended sediments can dilute their food source (Dennis 1984, p. 212). Adequate food availability and quality is essential for normal behavior, growth, and viability during all life stages of these two species. Excessive sedimentation often results in fine silt particles culminating within interstitial spaces, embedding and even concretizing the substrate and virtually altering habitat to such a degree that it becomes uninhabitable for mussels, particularly juveniles. Excessive suspended sediments may also impair visual acuity of host fish, an obstacle to the mechanisms that mussels employ to attract and inoculate host fish with glochidia.

The fluted kidneyshell and slabside pearlymussel are riverine species that depend upon adequate water flow. Continuously flowing water is a habitat feature associated with both of these species. Flowing water maintains the stream bottom habitats where these species are found, transports food items to the sedentary juvenile and adult life stages, removes wastes, and provides oxygen for respiration. A natural flow regime that includes periodic flooding and maintains connectivity and interaction with the floodplain is critical for the exchange of nutrients, movement of and spawning activities for potential fish hosts, and maintenance of flow refuges in riffle and run habitats. Further, riffle areas are often defined by an abundance and diversity of organisms that likely have dependent and competitive interactions yet unknown, but that are important for riffle-dwelling mussel species such as the fluted kidneyshell and slabside pearlymussel.

The ranges of standard physical and chemical water quality parameters (such as temperature, dissolved oxygen, pH, and conductivity) that define suitable habitat conditions for the two species are poorly understood and have not been fully investigated. However, as relatively sedentary animals, mussels must be able to tolerate the full range of such parameters that occur naturally within the streams where they persist, or they will either be biologically compromised such that feeding, breeding, or sheltering activities are affected or mortality occurs. Environmental contamination degrades water quality parameters to a level that negatively affects a mussel's biological functions and is a causal (contributing) factor in the decline of mussel populations.

Most numeric standards for pollutants and water quality parameters (for example, dissolved oxygen, pH, and heavy metals) that have been adopted by the States under the Clean Water Act (CWA; 33 U.S.C. 1251 *et seq.*) represent levels that are essential to the

conservation of both mussels. The Service is currently in consultation with the Environmental Protection Agency (EPA) to evaluate the protectiveness of criteria approved in EPA's water quality standards for endangered and threatened species and their critical habitats as described in the memorandum of agreement that our agencies signed in 2001 (66 FR 11201; February 22, 2001). Other factors that can potentially alter water quality are droughts and periods of low flow, water withdrawals, nonpoint source runoff from adjacent land surfaces (for example, excessive amounts of sediments, nutrients, and pesticides), point source discharges from municipal and industrial wastewater treatment facilities (for example, excessive amounts of ammonia, chlorine, and metals), thermal and flow modifications resulting from hydropower generation, and random spills or unregulated discharge events. These factors can be particularly harmful to mussels during drought conditions because water flows are depressed and pollutants are more concentrated.

Both water quantity and quality where both species currently exist vary widely according to season, precipitation events, and seasonal human activities within the watershed. Conditions across the mussels' historical ranges vary even more due to watershed size, geology, geography, and differences in human population densities and land uses. In general, both of the species survive in areas where the magnitude, frequency, duration, and seasonality of water flow are adequate to maintain stable habitats (for example, sufficient flow to remove fine particles and sediments without causing degradation), and where water quality is adequate for year-round survival (for example, moderate to high levels of dissolved oxygen, low to moderate input of nutrients, and relatively unpolluted water and sediments). Therefore, based on the information

above, we identify adequate food items for all life stages, sufficient water flow, and adequate water quality to be PBFs for both of these species.

Sites for Breeding, Reproduction, or Rearing

Mussels require a host fish for transformation of larval mussels (glochidia) to juvenile mussels (Williams *et al.* 2008, p. 68). Thus, the presence of the appropriate host fishes to complete the reproductive life cycle is essential to the conservation of these two mussels. The known host fishes of the fluted kidneyshell include: barcheek darter (*Etheostoma obeyesense*), fantail darter (*E. flabellare*), rainbow darter (*E. caeruleum*), redline darter (*E. rufilineatum*), bluebreast darter (*E. camurum*), dusky darter (*Percina sciera*), and banded sculpin (*Cottus carolinae*). The known host fishes of the slabside pearlymussel include: popeye shiner (*Notropis ariommus*), rosyface shiner (*N. rubellus*), saffron shiner (*N. rubricroceus*), silver shiner (*N. photogenis*), telescope shiner (*N. telescopus*), Tennessee shiner (*N. leuciodus*), whitetail shiner (*Cyprinella galactura*), striped shiner (*Luxilus chrysocephalus*), warpaint shiner (*L. coccogenis*), white shiner (*L. albeolus*), and eastern blacknose dace (*Rhinichthys atratulus*). There are likely other suitable host fishes that have not yet been studied or confirmed.

Fluted kidneyshell and slabside pearlymussel juveniles require stable habitats with adequate water quantity and quality as previously described for growth and survival. Excessive sediments or dense growth of filamentous algae can expose juvenile mussels to entrainment or predation and be detrimental to the survival of juvenile mussels (Hartfield and Hartfield 1996, pp. 372–374). Geomorphic instability can result in the loss of

interstitial habitats and juvenile mussels due to scouring or deposition (Hartfield 1993, pp. 372–373). Water quality, sediment quality, stable habitat, health of fish hosts, and diet (of all life stages) all influence survival of each life stage and subsequent reproduction and recruitment (Cope *et al.* 2008, p. 452).

Floodplain connectivity is important to dissipate hydrolic energy during periodic flooding. Also connection to the floodplain provides habitats during wet years for spawning and foraging activities for fish hosts that require floodplain habitats for successful reproduction and recruitment to adulthood. Barko *et al.* (2006, pp. 252–256) found that several fish host or potential host species (none of which is a documented host for the fluted kidneyshell or slabside pearlymussel) benefited from the ability to exploit floodplain habitat resources that were not typically available for use during years of normal flows. Furthermore, Kwak (1988, pp. 243–247) and Slipke and Maceina (2005, p. 289) indicated that periodic inundation of floodplain habitats increased successful fish reproduction, which leads to increased availability of native host fishes for mussel reproduction. However, Rypel *et al.* (2009, p. 502) indicated that mussels tended to exhibit minimal growth during high flow years. Therefore, optimal flooding of these habitats would not be too frequent and may need to occur at similar frequencies to that of the natural hydrologic regime of the rivers and creeks inhabited by the fluted kidneyshell and slabside pearlymussel.

Natural temperature regimes can be altered by impoundments, water releases from dams, industrial and municipal effluents, and changes in riparian habitat. Critical thermal limits for survival and normal functioning of many mussel species and host fish are unknown. High temperatures can reduce dissolved oxygen concentrations in the

water, which slows growth, reduces glycogen stores, impairs respiration, and may inhibit reproduction (Hart and Fuller 1974, pp. 240–241). Low temperatures can significantly delay or prevent metamorphosis (Watters and O'Dee 1999, pp. 454–455). Water temperature increases have been documented to shorten the period of glochidial encystment, increase oxygen consumption, reduce the speed in which they orient themselves in the substrate, and slow burrowing and movement responses (Hart and Fuller 1974, pp. 240–241; Bartsch *et al.* 2000, p. 237; Watters *et al.* 2001, p. 546; Schwalb and Pusch 2007, pp. 264–265). Several studies have documented the influence of temperature on the timing of aspects of mussel reproduction (e.g., Gray *et al.* 2002, p. 156; Allen *et al.* 2007, p. 85; Steingraeber *et al.* 2007, pp. 303–309). Peak glochidial releases are associated with water temperature thresholds that can be thermal minimums or maximums, depending on the species (Watters and O'Dee 2000, p. 136). Abnormal temperature changes may cause particular problems to mussels whose reproductive cycles may be linked to fish reproductive cycles (e.g., Young and Williams 1984, entire). Therefore, based on the information above, we identify presence of appropriate fish hosts, water quality, sediment quality, stable habitat, food for all life stages, periodic flooding of and connectivity to floodplain habitat, and a natural temperature regime to be PBFs for both of these species.

Primary Constituent Elements for the Fluted Kidneyshell and Slabside Pearlymussel

Under the Act and its implementing regulations, we are required to identify the PBFs essential to the conservation of these mussel species in areas occupied at the time

of listing, focusing on the features' primary constituent elements (PCEs). We consider PCEs to be the specific elements of PBFs that provide for a species' life-history processes and are essential to the conservation of the species.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the species and the habitat requirements for sustaining the essential life-history functions of the species, we have determined that the PCEs for the fluted kidneyshell are:

(1) Riffle habitats within large, geomorphically stable stream channels (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation).

(2) Stable substrates of sand, gravel, and cobble with low to moderate amounts of fine sediment and containing flow refugia with low shear stress.

(3) A natural hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species are found, and connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability for all life stages, and spawning habitat for native fishes.

(4) Water quality with low levels of pollutants and including a natural temperature regime, pH (between 6.0 to 8.5), oxygen content (not less than 5.0 milligrams per liter (mg/L)), hardness, and turbidity necessary for normal behavior, growth, and viability of all life stages.

(5) The presence of abundant fish hosts, which may include the barcheek darter,

fantail darter, rainbow darter, redline darter, bluebreast darter, dusky darter and banded sculpin, necessary for recruitment of the fluted kidneyshell.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the species and the habitat requirements for sustaining the essential life-history functions of the species, we have determined that the PCEs for the slabside pearly mussel are:

(1) Riffle habitats within large, geomorphically stable stream channels (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation).

(2) Stable substrates of sand, gravel, and cobble with low to moderate amounts of fine sediment and containing flow refugia with low shear stress.

(3) A natural hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found, and connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability for all life stages, and spawning habitat for native fishes.

(4) Water quality with low levels of pollutants and including a natural temperature regime, pH (between 6.0 to 8.5), oxygen content (not less than 5.0 milligrams/liter), hardness, and turbidity necessary for normal behavior, growth, and viability of all life stages.

(5) The presence of abundant fish hosts, which may include the popeye shiner, rosyface shiner, saffron shiner, silver shiner, telescope shiner, Tennessee shiner, whitetail

shiner, white shiner, and eastern blacknose dace, necessary for recruitment of the slabside pearlymussel.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and that may require special management considerations or protection. The 30 occupied units we are designating as critical habitat for the fluted kidneyshell (17) and the slabside pearlymussel (13), 10 of which overlap but are counted as separate critical habitat units for each species, will require some level of management to address the current and future threats to the PBFs of the species.

Habitat loss and degradation negatively impact the fluted kidneyshell and slabside pearlymussel. Severe degradation from impoundments, gravel and coal mining, oil and natural gas development, sedimentation, chemical contaminants, and stream channel alterations threaten the stream habitat and water quality on which these species depend. Contaminants associated with coal mining (metals, other dissolved solids), municipal effluents (bacteria, nutrients, pharmaceuticals), and agriculture (fertilizers, pesticides, herbicides, and animal waste) cause degradation of water quality and habitats through increased acidity and conductivity, instream oxygen deficiencies, excess nutrification, and excessive algal growths. The CWA has been insufficient to significantly reduce or remove these threats to the fluted kidneyshell and slabside pearlymussel.

Other natural and manmade factors, such as alteration of natural temperature

regimes below dams; chemical contaminants; sedimentation; small, isolated populations; and low genetic diversity, combined with localized extinctions from point source pollution or accidental toxic chemical spills, habitat modification and progressive degradation by nonpoint source pollutants, natural catastrophic changes to habitat through flood scour or drought as exacerbated by climate change, and nonindigenous species are threats to remaining populations of the fluted kidneyshell and slabside pearly mussel.

Of the 30 total occupied units, a portion of 6 units are located on the Daniel Boone National Forest (DBNF), 14 are almost entirely on private land, 1 is located on the Big South Fork National River and Recreational Area (BSFNRA), 1 is located on the Cherokee National Forest (CNF), and 8 units have mixed ownership with private, State park, and national wildlife refuge lands. Four of the occupied units have been designated as mussel sanctuaries by the TWRA.

Portions of six critical habitat units on DBNF land are being managed and protected under DBNF's Land and Resource Management Plan (LRMP), and the Hiwassee River unit is protected under CNF's LRMP (United States Forest Service (USFS) 2004a, pp. 1–14; 2004b, entire). The LRMPs are implemented through a series of project-level decisions based on appropriate site-specific analysis and disclosure. The LRMPs do not contain a commitment to select any specific project; rather, they set up a framework of desired future conditions with goals, objectives, and standards to guide project proposals. Projects are proposed to solve resource management problems, move the forest environment toward desired future conditions, and supply goods and services to the public (USFS 2004a, pp. 1–14). The LRMPs contain a number of protective

standards that in general are designed to avoid and minimize potential adverse effects to the fluted kidneyshell, slabside pearlymussel, and other federally listed species; however, the DBNF and CNF will continue to conduct project-specific section 7 consultations under the Act when their activities may adversely affect the fluted kidneyshell, slabside pearlymussel, and other federally listed species or adversely modify their designated critical habitats.

Fourteen of the 30 occupied critical habitat units are located almost entirely on private property and are not presently under the special management or protection provided by a legally operative plan or agreement for the conservation of the species.

One of the 30 occupied critical habitat units (Big South Fork Cumberland River) is located almost entirely on Federal lands within the BSFNRRRA. Land and resource management decisions and activities within the BSFNRRRA are guided by the National Park Service General Management Plan, Field Management Plan, and Draft Non-Federal Oil and Gas Management Plan (NPS 2005, entire; NPS 2006, pp. 1–12; NPS 2011, entire).

Eight of the 30 occupied critical habitat units (Clinch and Duck Rivers) have mixed ownership with private, State park, and national wildlife refuge lands. These lands are operated under various plans that may or may not provide the special management or protection provided by a legally operative plan or agreement for the conservation of these species.

Portions of four of the occupied critical habitat units (Powell, Clinch, Hiwassee, and Duck Rivers) have been designated as mussel sanctuaries by TWRA. The collection

of mollusks and the degradation or destruction of aquatic habitats in these areas is prohibited at all times.

Various activities in or adjacent to each of the occupied critical habitat units described in this final rule may affect one or more of the PBFs. Some of these activities include, but are not limited to, those discussed in the **Summary of Factors Affecting the Species** in the final listing rule found elsewhere in today's **Federal Register** (e.g., impoundments, gravel and coal mining, water pollution, invasive species; see *Factors A, D, and E*). Other activities that may affect PBFs in the final critical habitat units include those listed in **Available Conservation Measures** (see final listing rule). Special management considerations or protection will conserve the PBFs for these species. Management activities that could ameliorate threats on both Federal and non-Federal lands include, but are not limited to: Use of best management practices (BMPs) designed to reduce sedimentation, erosion, and stream bank alteration; moderation of surface and ground water withdrawals to maintain natural flow regimes; increase of stormwater management and reduction of stormwater flows into the systems; preservation of headwater streams; regulation of off-road vehicle use; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

In summary, we find that the areas we are designating as occupied critical habitat for the fluted kidneyshell and slabside pearlymussel contain the PBFs necessary for the species, and that these features may require special management considerations or protection. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the PBFs of each unit.

Additional discussion of threats facing individual units is provided in the individual unit descriptions below.

Criteria Used To Identify Critical Habitat

As required by section 4(b) of the Act, we used the best scientific and commercial data available to designate critical habitat for both the fluted kidneyshell and slabside pearl mussel. In accordance with the Act and its implementing regulations at 50 CFR 424.12(e), we also consider whether designating additional areas outside those currently occupied as well as those occupied at the time of listing is necessary to ensure the conservation of these species. We are designating critical habitat in areas within the geographic area currently occupied by the species. We also are designating specific areas outside the geographic area currently occupied by the species, which were historically occupied but are presently unoccupied, because such areas are essential for the conservation of the species.

We began our analysis by considering historical and current ranges of both species. We used various sources including published literature and museum collection databases, as well as surveys, reports, and field notes prepared by biologists. We then identified the specific areas that are occupied by both mussels and that contain one or more of the PBFs. We defined occupied habitat as those stream reaches known to be currently occupied by either of the two species. To identify the currently occupied stream reaches, we used post-1980 survey data. To identify the unoccupied stream reaches, we used survey data between the late 1800s and 1979. Therefore, if a species

was known to occur in an area prior to 1980, but was not collected since then, the stream reach is considered unoccupied. This criterion was chosen because a large number of collections were conducted in the 1980s in the Cumberland and Tennessee River systems. Some of the historical occurrences have not been surveyed since the 1980s. However, because of the longevity of these species (26-55 years) and the presence of fish hosts, they are still thought to occur in these areas.

We then evaluated occupied stream reaches to delineate the probable upstream and downstream extent of each species' distribution. Known occurrences for some mussel species are extremely localized, and rare mussels can be difficult to locate. In addition, stream habitats are highly dependent upon upstream and downstream channel habitat conditions for their maintenance. Therefore, where more than one occurrence record of a particular species was found within a stream reach, we considered the entire reach between the uppermost and lowermost locations as occupied habitat.

We then considered whether this essential area was adequate for the conservation of both species. Small, isolated, aquatic populations are subject to chance catastrophic events and to changes in human activities and land use practices that may result in their elimination. Larger, more contiguous populations can reduce the threat of extinction due to habitat fragmentation and isolation. For these reasons, conservation of the fluted kidneyshell, but not the slabside pearl mussel, requires expanding its range into currently unoccupied portions of its historical habitat. Given that threats to the fluted kidneyshell are compounded by its limited distribution and isolation, it is unlikely that currently occupied habitat is adequate for its conservation. The range of the fluted kidneyshell has been severely curtailed, occupied habitats are limited and isolated, and population sizes

are generally small (see **Summary of Factors Affecting the Species**, which can be found in the final listing rule published elsewhere in today's **Federal Register**). For example, the fluted kidneyshell is no longer believed to occur in the Rockcastle, Hiwassee, Elk, Holston, French Broad, or Buffalo Rivers. The inclusion of essential unoccupied areas will provide habitat for population reintroduction and will decrease the risk of extinction. Based on the best scientific data available, these areas not currently occupied by the fluted kidneyshell are essential for their conservation.

We eliminated from consideration as unoccupied critical habitat the Red and Harpeth River drainages; the Caney Fork, mainstem Cumberland, mainstem Tennessee, Tellico, Obey, South Fork Powell, South Fork Holston, West Prong Little Pigeon, Little Tennessee Rivers; and Kennedy, Pittman, Otter, Flint, Sugar, Limestone, Shoal, Puckell, North Fork, and Big Rock Creeks for both of these mussels. These areas are not essential for the conservation of the mussels because of stream channel alterations, a limited amount of available habitat coupled with isolation from other populations, a lack of a native mussel fauna, poor habitat or water quality, or a lack of available fish hosts.

All of the stream habitat areas designated as unoccupied critical habitat have sufficient water quality and fish hosts necessary for the fluted kidneyshell. The stream reaches also lack major anthropogenic disturbances and have potential for reoccupation by the species through future reintroduction efforts. Based on the above factors, all unoccupied stream reaches included in the designation for the fluted kidneyshell are essential for its conservation.

In our analysis (see above paragraph), we did not find suitable habitat, water quality, or fish hosts present in areas historically inhabited by but presently unoccupied

by the slabside pearlymussel. Therefore, we did not find any unoccupied stream reaches to be essential to the conservation of the slabside pearlymussel.

Following the identification of occupied and unoccupied stream reaches, the next step was to delineate the probable upstream and downstream extent of each species' distribution. We used USGS 1:100,000 digital stream maps to delineate these boundaries of designated critical habitat units according to the criteria explained below. The upstream boundary of a unit in a stream is the first perennial, named tributary confluence, a road-crossing bridge, or a permanent barrier to fish passage (such as a dam) above the upstream-most current occurrence record. The confluence of a tributary typically marks a significant change in the size of the stream and is a logical and recognizable upstream terminus. When a named tributary was not available, a road-crossing bridge was used to mark the boundary. Likewise, a dam or other barrier to fish passage marks the upstream extent to which mussels may disperse via their fish hosts. The downstream boundary of a unit in a stream is the confluence of a named tributary, or the upstream extent of an impoundment, below the downstream-most occurrence record. In the unit descriptions, distances between landmarks marking the upstream or downstream extent of a stream segment are given in river kilometers and equivalent miles, as measured tracing the course of the stream, not straight-line distance.

Because mussels are naturally restricted by certain physical conditions within a stream reach (i.e., flow, substrate), they may be unevenly distributed within these habitat units. Uncertainty on upstream and downstream distributional limits of some populations may have resulted in small areas of occupied habitat excluded from, or areas of unoccupied habitat included in, the designation. We recognize that both historical and

recent collection records upon which we relied are incomplete, and that there may be river segments or small tributaries not included in this designation that harbor small, limited populations of one or both species considered in this designation, or that others may become suitable in the future. The exclusion of such areas does not diminish their potential individual or cumulative importance to the conservation of these species.

However, with proper management, each of the critical habitat units (24 fluted kidneyshell units, and 13 slabside pearlymussel units; 10 overlap between the two species) are capable of supporting one or both of these mussel species, and that populations within occupied units will serve as source populations for artificial reintroduction into unoccupied units, as well as assisted or natural migration into adjacent undesignated or designated streams within each river drainage. The habitat areas contained within the units described below constitute our best evaluation of areas needed for the conservation of these species at this time. Critical habitat may be revised for any or all of these species should new information become available.

The areas designated as critical habitat below include only stream channels within the ordinary high-water line and do not contain developed areas or structures. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat.

Therefore, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the PBFs in the adjacent critical habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on <http://www.regulations.gov> at Docket No. FWS–R4–ES–2013–0026, on our Internet site at <http://www.fws.gov/cookeville>, and at the Fish and Wildlife office responsible for the designation (see **FOR FURTHER INFORMATION CONTACT** above).

Final Critical Habitat Designation

We are designating approximately 2,218 rkm (1,380 rmi) in Alabama, Kentucky, Mississippi, Tennessee, and Virginia as critical habitat. For the fluted kidneyshell, we are designating 24 critical habitat units encompassing approximately 1,899 rkm (1,181 rmi) of stream channel in Alabama, Kentucky, Tennessee, and Virginia. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the fluted kidneyshell. The 24 areas we designate as critical habitat are as follows: (1) Horse Lick Creek, KY; (2) Middle Fork Rockcastle River, KY; (3) Rockcastle River, KY; (4) Buck Creek, KY; (5) Rock Creek, KY; (6) Little South Fork Cumberland River, KY; (7) Big South Fork Cumberland River, KY, TN; (8) Wolf River and Town Branch, TN; (9) West Fork Obey River, TN; (10) Indian Creek, VA; (11) Little River [tributary to the Clinch River], VA; (12) North Fork Holston River, VA; (13) Middle Fork Holston River, VA; (14) Big Moccasin Creek, VA; (15)

Copper Creek, VA; (16) Clinch River, TN, VA; (17) Powell River, TN, VA; (18) Nolichucky River, TN; (19) Holston River, TN; (20) French Broad River, TN; (21) Hiwassee River, TN; (22) Elk River, AL, TN; (23) Duck River, TN; and (24) Buffalo River, TN.

We are designating 13 critical habitat units encompassing approximately 1,562 rkm (970 rmi) of stream channel in Alabama, Mississippi, Tennessee, and Virginia for the slabside pearl mussel. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the slabside pearl mussel. The 13 areas we designate as critical habitat are as follows: (1) North Fork Holston River, VA; (2) Middle Fork Holston River, VA; (3) Big Moccasin Creek, VA; (4) Clinch River, TN, VA; (5) Powell River, TN, VA; (6) Nolichucky River, TN; (7) Hiwassee River, TN; (8) Sequatchie River, TN; (9) Paint Rock River, AL; (10) Elk River, AL, TN; (11) Bear Creek, AL, MS; (12) Duck River, TN; and (13) Buffalo River, TN.

Note that 10 of the units overlap and are designated as critical habitat for both species (each overlapping unit is counted twice, once for each species): Unit FK12 and SP1 (North Fork Holston River, Virginia), Unit FK13 and SP2 (Middle Fork Holston River, Virginia), Unit FK14 and SP3 (Big Moccasin Creek, Virginia), Unit FK16 and SP4 (Clinch River, Tennessee and Virginia), Unit FK17 and SP5 (Powell River, Tennessee and Virginia), Unit FK18 and SP6 (Nolichucky River, Tennessee), Unit FK21 and SP7 (Hiwassee River, Tennessee), Unit FK22 and SP10 (Elk River, Alabama and Tennessee), Unit FK23 and SP12 (Duck River, Tennessee), and Unit FK24 and SP13 (Buffalo River, Tennessee).

Unit name, location, and the approximate stream length of each designated critical

habitat unit are shown in Table 1 for the fluted kidneyshell and Table 2 for the slabside pearlymussel. The designated critical habitat units include the stream channels within the ordinary high-water line only. For this purpose, we have applied the definition found at 33 CFR 329.11, and consider the ordinary high-water mark on nontidal rivers to be the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

States were granted ownership of lands beneath navigable waters up to the ordinary high-water line upon achieving Statehood (*Pollard v. Hagan*, 44 U.S. (3 How.) 212 (1845)). Prior sovereigns or the States may have made grants to private parties that included lands below the ordinary high-water mark of some navigable waters that are included in this final rule. Most, if not all, lands beneath the navigable waters included in this rule are owned by the States. The lands beneath most nonnavigable waters included in this rule are in private ownership. In Alabama, the riparian landowner owns the stream to the middle of the channel for non-navigable streams. Riparian lands along the waters are either in private ownership, or are owned by county, State, or Federal entities. Lands under county, State, and Federal ownership consist of managed conservation areas and are considered to have some level of protection.

Table 1. Occupancy and ownership of riparian lands adjacent to the designated critical habitat units for the fluted kidneyshell.

Unit	Location	Occupied by Species	Private Ownership rkm (rmi)	Federal, State, County, City Ownership rkm (rmi)	Total Length rkm (rmi)
FK1	Horse Lick Creek, KY	Yes	3.6 (2.3)	15.8 (10.1)	19.4 (12.4)
FK2	Middle Fork Rockcastle River, KY	Yes	6.0 (3.7)	6.5 (4.0)	12.5 (7.7)
FK3	Rockcastle River, KY	No	11.7 (7.3)	58.2 (36.2)	69.9 (43.5)
FK4	Buck Creek, KY	Yes	59.7 (37.1)	1.3 (0.8)	61.0 (37.9)
FK5	Rock Creek, KY	Yes	1.5 (0.9)	17.7 (11.0)	19.2 (11.9)
FK6	Little South Fork Cumberland River, KY	Yes	61.1 (38.0)	4.4 (2.7)	65.5 (40.7)
FK7	Big South Fork Cumberland River, KY, TN	Yes	1.5 (1.0)	90.0 (55.9)	91.5 (56.9)
FK8	Wolf River and Town Branch, TN	Yes	38.7 (24.0)	5.7 (3.5)	44.4 (27.5)
FK9	West Fork Obey River, TN	Yes	19.3 (12.0)	0	19.3 (12.0)
FK10	Indian Creek, VA	Yes	6.7 (4.2)	0	6.7 (4.2)
FK11	Little River, VA	Yes	50.4 (31.3)	0	50.4 (31.3)
FK12	North Fork Holston River, VA	Yes	66.4 (41.3)	0.9 (0.5)	67.3 (41.8)
FK13	Middle Fork Holston River, VA	Yes	89.0 (55.3)	0	89.0 (55.3)
FK14	Big Moccasin Creek, VA	No	33.1 (20.6)	0	33.1 (20.6)
FK15	Copper Creek, VA	Yes	55.5 (34.5)	0	55.5 (34.5)
FK16	Clinch River, TN, VA	Yes	256.3 (159.2)	6.4 (4.0)	262.7 (163.2)
FK17	Powell River, TN, VA	Yes	152.4 (94.7)	0.3 (0.2)	152.7 (94.9)
FK18	Nolichucky River, TN	Yes	50.9 (31.6)	0.9 (0.6)	51.9 (32.2)
FK19	Holston River, TN	No	85.1 (52.9)	0	85.1 (52.9)
FK20	French Broad River, TN	No	54.4 (33.8)	1.7 (1.1)	56.1 (34.9)
FK21	Hiwassee River, TN	No	0	24.4 (15.2)	24.4 (15.2)
FK22	Elk River, AL, TN	No	162.8 (101.2)	1.5 (0.9)	164.3 (102.1)
FK23	Duck River, TN	Yes	284.0 (176.5)	63.5 (39.4)	347.5 (215.9)
FK24	Buffalo River, TN	No	50.0 (31.0)	0	50.0 (31.0)

Total			1,899.4 (1,180.5)
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Table 2. Occupancy and ownership of riparian lands adjacent to the designated critical habitat units for the slabside pearlymussel.

Unit	Location	Occupied	Private Ownership rkm (rmi)	Federal, State, County, City Ownership rkm (rmi)	Total Length rkm (rmi)
SP1	North Fork Holston River, VA	Yes	66.4 (41.3)	0.9 (0.5)	67.3 (41.8)
SP2	Middle Fork Holston River, VA	Yes	89.0 (55.3)	0	89.0 (55.3)
SP3	Big Moccasin Creek, VA	Yes	33.1 (20.6)	0	33.1 (20.6)
SP4	Clinch River, TN, VA	Yes	256.3 (159.2)	6.4 (4.0)	262.7 (163.2)
SP5	Powell River, TN, VA	Yes	152.4 (94.7)	0.3 (0.2)	152.7 (94.9)
SP6	Nolichucky River, TN	Yes	50.9 (31.6)	0.9 (0.6)	51.9 (32.2)
SP7	Hiwassee River, TN	Yes	0	24.4 (15.2)	24.4 (15.2)
SP8	Sequatchie River, TN	Yes	151.5 (94.1)	0	151.5 (94.1)
SP9	Paint Rock River, AL	Yes	119.2 (74.1)	5.8 (3.6)	125.0 (77.7)
SP10	Elk River, AL, TN	Yes	162.8 (101.2)	1.5 (0.9)	164.3 (102.1)
SP11	Bear Creek, AL, MS	Yes	36.3 (22.5)	6.1 (3.8)	42.4 (26.3)
SP12	Duck River, TN	Yes	284.0 (176.5)	63.5 (39.4)	347.5 (215.9)
SP13	Buffalo River, TN	Yes	50.0 (31.0)	0	50.0 (31.0)
Total					1,561.8 (970.3)

Eleven critical habitat units designated for the fluted kidneyshell, slabside pearlymussel, or both species are currently designated as critical habitat under the Act for other species, including the purple bean (*Villosa perpurpurea*), oyster mussel, Cumberlandian combshell, Cumberland elktoe (*Alasmidonta atropurpurea*), rough

rabbitsfoot, rabbitsfoot, slender chub (*Erimystax cahni*), and yellowfin madtom (*Noturus flavipinnis*) (42 FR 45526, 78 FR 57076, 42 FR 47840, 69 FR 53136) (see Table 3). The designated units for the fluted kidneyshell and slabside pearlymussel completely or partially overlap existing units in the Powell, Clinch, Nolichucky, Big South Fork Cumberland, Duck, and Paint Rock Rivers and in the Buck, Rock, Indian, Copper, and Bear Creeks; however, the exact unit descriptions (lengths) differ due to mapping refinement since the earlier designations.

Three critical habitat units designated for the fluted kidneyshell and slabside pearlymussel are currently designated under section 10(j) of the Act as NEPs for other species, including the yellowfin madtom in the North Fork Holston River, VA; and 15 mussels, 1 snail, and 5 fishes in the lower Holston and French Broad Rivers, TN (53 FR 29335, 72 FR 52434, see Table 3).

All of the critical habitat units designated for the fluted kidneyshell and slabside pearlymussel contain historical or extant records of federally listed or proposed species, except for the Wolf River and Town Branch and West Fork Obey River, TN (see Table 4).

Table 3. Critical habitat units designated for the fluted kidneyshell and slabside pearlymussel that are currently designated or proposed as critical habitat or nonessential experimental populations (NEPs) for other federally listed species.

Unit (Unit #)	Species	Critical Habitat	Nonessential Experimental Population	Length of overlap rkm (rmi)
Buck Creek (FK4)	Oyster mussel, Cumberlandian combshell	69 FR 53136		61 (38)

Unit (Unit #)	Species	Critical Habitat	Nonessential Experimental Population	Length of overlap rkm (rmi)
Rock Creek (FK5)	Cumberland elktoe	69 FR 53136		19 (12)
Big South Fork Cumberland River (FK7)	Oyster mussel, Cumberlandian combshell, Cumberland elktoe	69 FR 53136		92 (57)
Indian Creek (FK10)	Purple bean, Oyster mussel, Cumberlandian combshell, Rough rabbitsfoot	69 FR 53136		7 (4)
North Fork Holston River (FK12, SP1)	Yellowfin madtom		53 FR 29335	58 (36)
Copper Creek (FK15)	Purple bean, Oyster mussel, Cumberlandian combshell, Rough rabbitsfoot, Yellowfin madtom	69 FR 53136 42 FR 45526 42 FR 47840		21 (13) 56 (35) 56 (35)
Clinch River (FK16, SP4)	Purple bean, Oyster mussel, Cumberlandian combshell, Rough rabbitsfoot, Slender chub, Yellowfin madtom	69 FR 53136 42 FR 45526, 42 FR 47840		263 (163) 263 (163) 263 (163)
Powell River (FK17, SP5)	Purple bean, Cumberlandian combshell, Oyster mussel, Rough rabbitsfoot, Slender chub, Yellowfin madtom	69 FR 53136 42 FR 45526, 42 FR 47840		153 (95) 153 (95) 153 (95)
Nolichucky River (FK18, SP6)	Oyster mussel, Cumberlandian combshell	69 FR 53136		8 (5)
Holston River (FK19)	15 Mussels, 1 Snail, and 5 Fishes		72 FR 52434	85 (53)
French Broad River (FK20)	15 Mussels, 1 Snail, and 5 Fishes		72 FR 52434	56 (35)
Paint Rock River	Rabbitsfoot	78 FR 57076		81 (50)

Unit (Unit #)	Species	Critical Habitat	Nonessential Experimental Population	Length of overlap rkm (rmi)
(SP9)				
Bear Creek (SP11)	Oyster mussel, Cumberlandian combshell, Rabbitsfoot	69 FR 53136 78 FR 57076		42 (26) 42 (26)
Duck River (FK23, SP12)	Oyster mussel, Cumberlandian combshell, Rabbitsfoot	69 FR 53136 78 FR 57076		74 (46) 235 (146)
Critical Habitat Overlap				1,017 (631)
NEP Overlap				199 (124)
Total Overlap				1,216 (755)

Note: For those units with critical habitat designations for more than one species, the critical habitat unit with the longest length of overlap was used to calculate the total overlap (e.g., Duck River is critical habitat for the oyster mussel (74 rkm) and rabbitsfoot (235 rkm). The designated units for the fluted kidneyshell and slabside pearlymussel completely or partially overlap existing units in the Powell, Clinch, Nolichucky, Big South Fork Cumberland, Duck, and Paint Rock Rivers and in the Buck, Rock, Indian, Copper, and Bear Creeks; however, the exact unit descriptions (lengths) differ due to mapping refinement since the earlier designations.

Table 4. Other federally listed or proposed species with historical or extant records from the designated critical habitat unit streams for the fluted kidneyshell and slabside pearlymussel.

Unit	Location	Federally Listed or Proposed Species Present	
FK1	Horse Lick Creek, KY	Cumberland bean	<i>Villosa trabalis</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
FK2	Middle Fork Rockcastle River, KY	Cumberland bean	<i>Villosa trabalis</i>
FK3	Rockcastle River, KY	Cumberland bean	<i>Villosa trabalis</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
FK4	Buck Creek, KY	Cumberland bean	<i>Villosa trabalis</i>

		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		snuffbox	<i>Epioblasma triquetra</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
FK5	Rock Creek, KY	Cumberland elktoe	<i>Alasmidonta atropurpurea</i>
FK6	Little South Fork Cumberland River, KY	Cumberland bean	<i>Villosa trabalis</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		snuffbox	<i>Epioblasma triquetra</i>
		palezone shiner	<i>Notropis albizonatus</i>
FK7	Big South Fork Cumberland River, KY	Cumberland bean	<i>Villosa trabalis</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		Cumberland elktoe	<i>Alasmidonta atropurpurea</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		duskytail darter	<i>Etheostoma percnurum</i>
FK8	Wolf River and Town Branch, TN	None	
FK9	West Fork Obey River, TN	None	
FK10	Indian Creek, VA	purple bean	<i>Villosa perpurpurea</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		rough rabbitsfoot	<i>Quadrula cylindrica strigillata</i>
FK11	Little River, VA	finerayed pigtoe	<i>Fusconaia cuneolus</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
FK12, SP1	North Fork Holston River, VA	littlewing pearlymussel	<i>Pegias fabula</i>
		purple bean	<i>Villosa perpurpurea</i>
		rough rabbitsfoot	<i>Quadrula cylindrica strigillata</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spotfin chub	<i>Erimonax monachus</i>
FK13, SP2	Middle Fork Holston River, VA	littlewing pearlymussel	<i>Pegias fabula</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		yellow blossom	<i>Epioblasma florentina</i>

			<i>florentina</i>
		spotfin chub	<i>Erimonax monachus</i>
FK14, SP3	Big Moccasin Creek, VA	finerayed pigtoe	<i>Fusconaia cuneolus</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		rough rabbitsfoot	<i>Quadrula cylindrica strigillata</i>
FK15	Copper Creek, VA	finerayed pigtoe	<i>Fusconaia cuneolus</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		purple bean	<i>Villosa perpurpurea</i>
		rough rabbitsfoot	<i>Quadrula cylindrica strigillata</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		duskytail darter	<i>Etheostoma percnurum</i>
		yellowfin madtom	<i>Noturus flavipinnis</i>
FK16, SP4	Clinch River, TN, VA	Appalachian monkeyface	<i>Quadrula sparsa</i>
		birdwing pearlymussel	<i>Lemiox rimosus</i>
		cracking pearlymussel	<i>Hemistena lata</i>
		Cumberland bean	<i>Villosa trabalis</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		Cumberland monkeyface	<i>Quadrula intermedia</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		fanshell	<i>Cyprogenia stegaria</i>
		finerayed pigtoe	<i>Fusconaia cuneolus</i>
		green blossom pearlymussel	<i>Epioblasma torulosa gubernaculum</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		pink mucket	<i>Lampsilis abrupta</i>
		purple bean	<i>Villosa perpurpurea</i>
		rayed bean	<i>Villosa fabalis</i>
		rough pigtoe	<i>Pleurobema plenum</i>
		rough rabbitsfoot	<i>Quadrula cylindrica strigillata</i>
		sheepnose	<i>Plethobasus cyphus</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		yellow blossom	<i>Epioblasma florentina florentina</i>
		pygmy madtom	<i>Noturus stanauli</i>
		slender chub	<i>Erimystax cahni</i>
FK17, SP5	Powell River, TN, VA	Appalachian monkeyface	<i>Quadrula sparsa</i>

		birdwing pearlymussel	<i>Lemiox rimosus</i>
		cracking pearlymussel	<i>Hemistena lata</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		Cumberland monkeyface	<i>Quadrula intermedia</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		finerayed pigtoe	<i>Fusconaia cuneolus</i>
		green blossom pearlymussel	<i>Epioblasma torulosa gubernaculum</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		purple bean	<i>Villosa perpurpurea</i>
		rayed bean	<i>Villosa fabalis</i>
		rough rabbitsfoot	<i>Quadrula cylindrica strigillata</i>
		sheepnose	<i>Plethobasus cyphus</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
		slender chub	<i>Erimystax cahni</i>
		yellowfin madtom	<i>Noturus flavipinnis</i>
FK18, SP6	Nolichucky River, TN	Cumberlandian combshell	<i>Epioblasma brevidens</i>
		green blossom pearlymussel	<i>Epioblasma torulosa gubernaculum</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		rayed bean	<i>Villosa fabalis</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		snail darter	<i>Percina tanasi</i>
FK19	Holston River, TN	Appalachian Monkeyface	<i>Quadrula sparsa</i>
		birdwing pearlymussel	<i>Lemiox rimosus</i>
		cracking pearlymussel	<i>Hemistena lata</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		Cumberland monkeyface	<i>Quadrula intermedia</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		green blossom pearlymussel	<i>Epioblasma torulosa gubernaculum</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		pink mucket	<i>Lampsilis abrupta</i>
		ring pink	<i>Obovaria retusa</i>
		sheepnose	<i>Plethobasus cyphus</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		turgid blossom pearlymussel	<i>Epioblasma turgidula</i>
		white wartyback	<i>Plethobasus cicatricosus</i>
		yellow blossom	<i>Epioblasma florentina</i>

			<i>florentina</i>
		slender chub	<i>Erimystax cahni</i>
		snail darter	<i>Percina tanasi</i>
FK20	French Broad River, TN	birdwing pearlymussel	<i>Lemiox rimosus</i>
		cracking pearlymussel	<i>Hemistena lata</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		fanshell	<i>Cyprogenia stegaria</i>
		orangefoot pimpleback	<i>Plethobasus cooperianus</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		pink mucket	<i>Lampsilis abrupta</i>
		ring pink	<i>Obovaria retusa</i>
		rough pigtoe	<i>Pleurobema plenum</i>
		sheepnose	<i>Plethobasus cyphus</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		tubercled blossom pearlymussel	<i>Epioblasma torulosa torulosa</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
		snail darter	<i>Percina tanasi</i>
FK21, SP7	Hiwassee River, TN	Appalachian monkeyface	<i>Quadrula sparsa</i>
		Cumberland bean	<i>Villosa trabalis</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		orangefoot pimpleback	<i>Plethobasus cooperianus</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		rough pigtoe	<i>Pleurobema plenum</i>
		sheepnose	<i>Plethobasus cyphus</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		tubercled blossom pearlymussel	<i>Epioblasma torulosa torulosa</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
SP8	Sequatchie River, TN	Anthony's riversnail	<i>Athearnia anthonyi</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		snail darter	<i>Percina tanasi</i>
SP9	Paint Rock River, AL	Alabama lampmussel	<i>Lampsilis virescens</i>
		Cumberland bean	<i>Villosa trabalis</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		finerayed pigtoe	<i>Fusconaia cuneolus</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		pale lilliput	<i>Toxolasma cylindrellus</i>
		pink mucket	<i>Lampsilis abrupta</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		snuffbox	<i>Epioblasma triquetra</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
		palezone shiner	<i>Notropis albizonatus</i>

		snail darter	<i>Percina tanasi</i>
		rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>
FK22, SP10	Elk River, AL, TN	Alabama lampmussel	<i>Lampsilis virescens</i>
		birdwing pearlymussel	<i>Lemiox rimosus</i>
		cracking pearlymussel	<i>Hemistena lata</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		Cumberland monkeyface	<i>Quadrula intermedia</i>
		dromedary pearlymussel	<i>Dromus dromas</i>
		fanshell	<i>Cyprogenia stegaria</i>
		finerayed pigtoe	<i>Fusconaia cuneolus</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		pale lilliput	<i>Toxolasma cylindrellus</i>
		rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>
		rayed bean	<i>Villosa fabalis</i>
		shiny pigtoe	<i>Fusconaia cor</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		tan riffleshell	<i>Epioblasma florentina walkeri (=E. walkeri)</i>
		tubercled blossom pearlymussel	<i>Epioblasma torulosa torulosa</i>
		turgid blossom pearlymussel	<i>Epioblasma turgidula</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
		boulder darter	<i>Etheostoma wapiti</i>
		snail darter	<i>Percina tanasi</i>
SP11	Bear Creek, AL, MS	Alabama lampmussel	<i>Lampsilis virescens</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>
		pink mucket	<i>Lampsilis abrupta</i>
		snuffbox	<i>Epioblasma triquetra</i>
		turgid blossom pearlymussel	<i>Epioblasma turgidula</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
		rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>
FK23, SP12	Duck River, TN	birdwing pearlymussel	<i>Lemiox rimosus</i>
		clubshell	<i>Pleurobema clava</i>
		cracking pearlymussel	<i>Hemistena lata</i>
		Cumberlandian combshell	<i>Epioblasma brevidens</i>
		Cumberland monkeyface	<i>Quadrula intermedia</i>
		littlewing pearlymussel	<i>Pegias fabula</i>
		oyster mussel	<i>Epioblasma capsaeformis</i>

		pale lilliput	<i>Toxolasma cylindrellus</i>
		pink mucket	<i>Lampsilis abrupta</i>
		rayed bean	<i>Villosa fabalis</i>
		sheepnose	<i>Plethobasus cyphus</i>
		snuffbox	<i>Epioblasma triquetra</i>
		spectaclecase	<i>Cumberlandia monodonta</i>
		tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. walkeri)
		tubercled blossom pearlymussel	<i>Epioblasma torulosa torulosa</i>
		turgid blossom pearlymussel	<i>Epioblasma turgidula</i>
		winged mapleleaf	<i>Quadrula fragosa</i>
		yellow blossom	<i>Epioblasma florentina florentina</i>
		pygmy madtom	<i>Noturus stanauli</i>
		rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>
FK24, SP13	Buffalo River, TN	pale lilliput	<i>Toxolasma cylindrellus</i>
		spotfin chub	<i>Erimonax monachus</i>
		rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>

For each stream reach designated as a critical habitat unit, the upstream and downstream boundaries are described generally below. More precise definitions are provided in the **Regulation Promulgation** section at the end of this final rule. For a discussion of the status and distribution of the fluted kidneyshell and slabside pearlymussel for each critical habitat unit, refer to the final listing rule published elsewhere in today's **Federal Register**.

Fluted Kidneyshell and Slabside Pearlymussel Critical Habitat

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed must contain PBFs

which are (1) essential to the conservation of the species and (2) which may require special management considerations or protection. For those units occupied by either the fluted kidneyshell, slabside pearlymussel, or both species, we describe the principal PBFs essential to the conservation of the species and the special management considerations or protections that may be needed for each unit below.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For those units unoccupied by the fluted kidneyshell, we are designating these units because we have determined that they are essential for the conservation of the species due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events.

For four of the units (Big Moccasin Creek; Hiwassee, Elk, and Buffalo Rivers), we are designating critical habitat for the slabside pearlymussel under prong one of the Act (occupied), while at the same time designating the unit under prong two of the Act for the fluted kidneyshell species (unoccupied). Therefore, the principal PBFs and special management considerations or protections given for these units only apply to the species for which the unit is occupied critical habitat (slabside pearlymussel).

Unit FK1: Horse Lick Creek, Rockcastle and Jackson Counties, Kentucky

Unit FK1 encompasses approximately 19 rkm (12 rmi) of Horse Lick Creek, in Rockcastle and Jackson Counties, KY. It includes the mainstem of Horse Lick Creek from its confluence with the Rockcastle River upstream to Clover Bottom Creek. The

unit is within the Cumberland River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the fluted kidneyshell at the time of listing. This unit is located almost entirely on private lands; however, approximately 16 rkm (10 rmi) are federal lands within the DBNF. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004a, pp. 1–14).

The channel within Unit FK1 is relatively stable, with an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish host(s) for the fluted kidneyshell, are known from this unit (PCE 5).

Within Unit FK1, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects associated with legacy coal mines and coal mining activities, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, illegal off-road vehicle use and other recreational activities, and nonpoint source pollution originating in headwater reaches.

Unit FK2: Middle Fork Rockcastle River, Jackson County, Kentucky

Unit FK2 includes 12.5 rkm (7.7 rmi) of the Middle Fork Rockcastle River from its confluence with the Rockcastle River upstream to its confluence with Indian Creek and Laurel Fork in Jackson County, KY. The unit is within the Cumberland River system and is occupied critical habitat for the fluted kidneyshell. About half of this unit (approximately 6 rkm (4 rmi)) is in public ownership (DBNF), and half is in private

ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004a, pp. 1–14).

The channel within Unit FK2 is relatively stable and has an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (coal mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and potentially canopy loss caused by infestations of the hemlock woolly adelgid, *Adelges tsugae*, an invasive pest threatening eastern hemlock trees (*Tsuga canadensis*) in the eastern United States. Hemlocks are an important component of riparian vegetation throughout the range of the two mussels.

Unit FK3: Rockcastle River, Pulaski, Laurel, and Rockcastle Counties, Kentucky

Unit FK3 includes approximately 70 rkm (43 rmi) of the Rockcastle River from the backwaters of Lake Cumberland near its confluence with Cane Creek along the Laurel and Pulaski County line, KY, upstream to its confluence with Horse Lick Creek along the Laurel and Rockcastle County line, KY. The unit is within the Cumberland River system and is considered unoccupied by the fluted kidneyshell at the time of listing, but within the species' historical range. Live fluted kidneyshell have not been

collected within Unit FK3 since 1911; however, it persists in adjacent tributaries such as Horse Lick Creek and shell material has been found as recently as 1985 (Wilson and Clark 1914 and Thompson 1985 *in* Cicerello 1993, p. 12). In 2010, surveys of the Rockcastle River showed that the river had a diverse mussel fauna, including the federally endangered Cumberland bean (McGregor 2010, unpubl. data).

We consider this unit essential for the conservation of the fluted kidneyshell due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events. Therefore, this unit is designated as unoccupied critical habitat for the fluted kidneyshell. A portion of this unit (approximately 12 rkm (7 rmi)) is in private ownership, but the majority is in public ownership (DBNF). Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004a, pp. 1–14).

Unit FK4: Buck Creek, Pulaski County, Kentucky

Unit FK4 includes approximately 61 rkm (38 rmi) of Buck Creek from State Route 192 upstream to Route 328, Pulaski County, KY. The unit is within the Cumberland River basin and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the species at the time of listing. A portion of this unit (1.3 rkm (0.8 rmi)) is in public ownership (DBNF), but the majority is in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004a, pp. 1–14). The unit completely overlaps existing critical habitat for the oyster mussel and Cumberlandian combshell (69 FR 53136).

The channel within Unit FK4 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish host(s) for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects associated with instream gravel mining, silviculture-related activities, illegal off-road vehicle use and other recreational activities, and nonpoint source pollution from agricultural and developmental activities.

Unit FK5: Rock Creek, McCreary County, Kentucky

Unit FK5 includes approximately 19 rkm (12 rmi) of Rock Creek from its confluence with White Oak Creek upstream to the low water crossing at rkm 25.6 (rmi 15.9) in McCreary County, KY. The unit is within the Cumberland River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the species at the time of listing. A portion of this unit (1.5 rkm (0.9 rmi)) is in private ownership, but the majority is in public ownership (DBNF). Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004a, pp. 1–14). The unit completely overlaps existing critical habitat for the Cumberland elktoe (69 FR 53136).

The channel within Unit FK5 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish

fauna, including fish host(s) for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (coal mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and potentially canopy loss caused by infestations of the hemlock woolly adelgid.

Unit FK6: Little South Fork Cumberland River, McCreary and Wayne Counties, Kentucky

Unit FK6 includes 65.5 rkm (40.7 rmi) of the Little South Fork Cumberland River from its confluence with the Big South Fork Cumberland River, where it is the dividing line between Wayne and McCreary Counties, upstream to its confluence with Dobbs Creek in Wayne County, KY. The unit is within the Cumberland River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the species at the time of listing. A portion of this unit (4.4 rkm (2.7 rmi)) is in public ownership (DBNF), but the majority is in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004a, pp. 1–14).

The channel within Unit FK6 is relatively stable, with an abundance of riffle habitats (PCE 1), relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish host(s) for the fluted

kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (coal mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and potentially canopy loss caused by infestations of the hemlock woolly adelgid.

Unit FK7: Big South Fork Cumberland River, Fentress, Morgan, and Scott Counties, Tennessee, and McCreary County, Kentucky

Unit FK7 includes a combined total of approximately 92 rkm (57 rmi) of the Big South Fork of the Cumberland River, Clear Fork of the New River, and the New River in Tennessee and Kentucky. Unit FK7 includes approximately 45 rkm (28 rmi) of the Big South Fork Cumberland River from its confluence with Laurel Crossing Branch downstream of Big Shoals, McCreary County, KY, upstream to its confluence with Clear Fork and of the New River, Scott County, TN. This unit also includes 32.3 rkm (20.0 rmi) of Clear Fork from its confluence with the Big South Fork and New River in Scott County, TN, upstream to its confluence with Crooked Creek along the Fentress and Morgan County line, TN. This unit also includes 14.7 rkm (9.1 rmi) of the New River from its confluence with the Big South Fork upstream to the Highway 27 Bridge crossing in Scott County, TN. The unit is within the Cumberland River system and is designated as critical habitat for the fluted kidneyshell. This unit is included in the geographical area

occupied by the species at the time of listing. A portion of this unit (92 rkm (57 rmi)) has been designated as critical habitat for the Cumberlandian combshell, oyster mussel, and Cumberland elktoe (69 FR 53136).

This unit is located almost entirely on federal lands within the BSFNRRA. Land and resource management decisions and activities within the BSFNRRA are guided by the National Park Service General Management Plan, Field Management Plan, and Draft Non-Federal Oil and Gas Management Plan (NPS 2005, entire; NPS 2006, pp. 1–12; NPS 2011, entire).

The channel within Unit FK7 is relatively stable, with relatively silt-free sand and gravel substrates (PCE 2) and adequate instream flows (PCE 3). A diverse fish fauna, including fish host(s) for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (coal mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, construction and maintenance of roads, recreational horse riding, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and potential canopy loss caused by infestations of the hemlock woolly adelgid.

Unit FK8: Wolf River and Town Branch, Pickett and Fentress Counties, Tennessee

Unit FK8 includes 41.0 rkm (25.5 rmi) of the Wolf River from its inundation at Dale Hollow Lake in Pickett County, TN, upstream to its confluence with Delk Creek in Fentress County, TN, and 3.4 rkm (2.0 rmi) of Town Branch from its confluence with

Wolf River upstream to its headwaters in Pickett County, TN. The unit is within the Cumberland River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the species at the time of listing. A portion of this unit (6 rkm (4 rmi)) is in public ownership (U.S. Army Corps of Engineers lands adjacent to Dale Hollow Reservoir and Sgt. Alvin C. York State Historic Park), but the majority is in private ownership.

The channel within Unit FK8 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2) and adequate instream flows (PCE 3). A diverse fish fauna, including fish host(s) for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects associated with coal mining, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, off-road vehicle use and other recreational activities, nonpoint source pollution originating in headwater reaches, and potential canopy loss caused by infestations of the hemlock woolly adelgid.

Unit FK9: West Fork Obey River, Overton County, Tennessee

Unit FK9 includes approximately 19 rkm (12 rmi) of the West Fork Obey River from the Highway 52 Bridge crossing upstream to its confluence with Dry Hollow Creek in Overton County, TN. The unit is within the Cumberland River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied

by the species at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements.

The channel within Unit FK9 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish host(s) for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects associated with coal mining, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, off-road vehicle use and other recreational activities, agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution originating in headwater reaches, and potential canopy loss caused by infestations of the hemlock woolly adelgid.

Unit FK10: Indian Creek, Tazewell County, Virginia

Unit FK10 includes 6.7 rkm (4.2 rmi) of Indian Creek from its confluence with the Clinch River upstream to the fourth Norfolk Southern Railroad crossing at Van Dyke in Tazewell County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the species at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements. The unit completely overlaps critical habitat for the Cumberlandian

combshell, rough rabbitsfoot, purple bean, and oyster mussel (69 FR 53136).

The channel within Unit FK10 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects associated with residential development, coal mining, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, illegal off-road vehicle use and other recreational activities, and nonpoint source pollution originating in headwater reaches.

Unit FK11: Little River, Russell and Tazewell Counties, Virginia

Unit FK11 includes approximately 50 rkm (31 rmi) of Little River from its confluence with the Clinch River in Russell County, VA, upstream to its confluence with Liberty and Maiden Spring Creeks in Tazewell County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by fluted kidneyshell at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements. The Nature Conservancy also owns a small portion of adjacent property.

The channel within Unit FK11 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish

fauna, including fish hosts for the fluted kidneyshell and slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitats may require special management considerations or protection to address potential adverse effects associated with silviculture-related activities, lack of adequate riparian buffers, natural gas and oil exploration activities in headwater reaches, and nonpoint source pollution originating in headwater reaches.

Unit FK12 and SP1: North Fork Holston River, Smyth and Bland Counties, Virginia

Unit FK12 and SP1 includes approximately 67 rkm (42 rmi) of the North Fork Holston River from its confluence with Beaver Creek, upstream of Saltville, in Smyth County, VA, upstream to Ceres, Bland County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by both species at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings, road easements, and a small portion that is adjacent to the George Washington and Jefferson National Forests. The Nature Conservancy and the Virginia Outdoors Foundation also own a small portion of adjacent property. A portion of this unit (58 rkm (36 rmi)) has been designated as a NEP for the yellowfin madtom (53 FR 29335).

The channel within Unit FK12 and SP1 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish

fauna, including fish hosts for the fluted kidneyshell and slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell, slabside pearlymussel, and their habitats may require special management considerations or protection to address potential adverse effects associated with agricultural activities, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution originating in headwater reaches.

Unit FK13 and SP2: Middle Fork Holston River, Washington, Smyth, and Wythe Counties, Virginia

Unit FK13 and SP2 includes approximately 89 rkm (55 rmi) of the Middle Fork Holston River from its inundation at South Holston Lake in Washington County, VA, upstream to its headwaters in Wythe County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by both the fluted kidneyshell and slabside pearlymussel at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements.

The channel within Unit FK13 and SP2 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the fluted kidneyshell and slabside pearlymussel, are

known from this unit (PCE 5).

Within this unit, the fluted kidneyshell, slabside pearlymussel, and their habitats may require special management considerations or protection to address potential adverse effects associated with agricultural activities, lack of adequate riparian buffers, silviculture-related activities, and nonpoint source pollution.

Unit FK14 and SP3: Big Moccasin Creek, Scott and Russell Counties, Virginia

Unit FK14 and SP3 includes approximately 33 rkm (21 rmi) of Big Moccasin Creek from the Highway 71 Bridge crossing in Scott County, VA, upstream to the Route 612 Bridge crossing near Collinwood in Russell County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by slabside pearlymussel at the time of listing. This unit is considered unoccupied by the fluted kidneyshell, but within the species' historical range. Live fluted kidneyshell have not been collected in Big Moccasin Creek since the early 1900s (Ortmann 1918, p. 608). However, this unit is designated as critical habitat for the fluted kidneyshell because it is considered essential for the conservation of the species (see *Criteria Used To Identify Critical Habitat* above for our rationale). This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements.

The channel within Unit FK14 and SP3 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish

fauna, including fish hosts for the slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the slabside pearlymussel and its habitats may require special management considerations or protection to address potential adverse effects associated with agricultural activities (livestock), lack of adequate riparian buffers, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, illegal off-road vehicle use and other recreational activities, and nonpoint source pollution originating in headwater reaches.

Unit FK15: Copper Creek, Scott County, Virginia

Unit FK15 includes 55.5 rkm (34.5 rmi) of Copper Creek from its confluence with the Clinch River upstream to the Highway 71 Bridge crossing in Scott County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell. This unit is included in the geographical area occupied by the species at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements. A portion of this unit (21 rkm (13 rmi)) has been designated as critical habitat for the Cumberlandian combshell, rough rabbitsfoot, purple bean, and oyster mussel, and this unit (55.5 rkm (34.5 rmi)) also makes up a portion of the designated critical habitat for the yellowfin madtom (42 FR 45526, 42 FR 47840, 69 FR 53136).

The channel within Unit FK15 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish

fauna, including fish hosts for the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell and its habitat may require special management considerations or protection to address potential adverse effects associated with agricultural activities (livestock), silviculture-related activities, lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution originating in headwater reaches.

Unit FK16 and SP4: Clinch River, Hancock County, Tennessee, and Scott, Russell, and Tazewell Counties, Virginia

Unit FK16 and SP4 includes approximately 263 rkm (163 rmi) of the Clinch River from rkm 255 (rmi 159) immediately below Grissom Island in Hancock County, TN, upstream to its confluence with Indian Creek near Cedar Bluff, Tazewell County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearl mussel. This unit is included in the geographical area occupied by both species at the time of listing. Approximately 6 rkm (4 rmi) of this unit is in public ownership, including portions of the Kyles Ford State Managed Area, George Washington National Forest, Jefferson National Forest, Cleveland Barrens State Natural Area Preserve (SNAP), and the Pinnacle SNAP. The Nature Conservancy also owns a small portion of adjacent property. The unit completely overlaps critical habitat for the Cumberlandian combshell, rough rabbitsfoot, purple bean, and oyster mussel, and the entire length of this unit has been designated as critical habitat for the slender chub and yellowfin madtom (42 FR 45526, 42 FR 47840, 69 FR 53136).

The channel within Unit FK16 and SP4 is relatively stable, with suitable instream

habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the fluted kidneyshell and slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell, slabside pearlymussel, and their habitats may require special management considerations or protection to address potential adverse effects associated with coal mining, silviculture-related activities, natural gas and oil exploration activities in headwater reaches, agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution originating in headwater reaches.

Unit FK17 and SP5: Powell River, Claiborne and Hancock Counties, Tennessee, and Lee County, Virginia

Unit FK17 and SP5 includes approximately 153 rkm (95 rmi) of the Powell River from the U.S. 25E Bridge in Claiborne County, TN, upstream to rkm 256 (rmi 159) (upstream of Rock Island in the vicinity of Pughs) in Lee County, VA. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by both species at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings, road easements, and a small portion that is adjacent to the Cedars SNAP. The Nature Conservancy also owns a small portion of adjacent property. The unit completely overlaps critical habitat for the Cumberlandian combshell, rough rabbitsfoot, purple bean, and oyster mussel, and the

entire length of this unit has been designated as critical habitat for the slender chub and yellowfin madtom (42 FR 45526, 42 FR 47840, 69 FR 53136).

The channel within Unit FK17 and SP5 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the fluted kidneyshell and slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell, slabside pearlymussel, and their habitats may require special management considerations or protection to address potential adverse effects associated with coal mining, natural gas and oil exploration activities in headwater reaches, agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution originating in headwater reaches.

Unit FK18 and SP6: Nolichucky River, Cocke, Hamblen, and Greene Counties, Tennessee

Unit FK18 and SP6 includes approximately 52 rkm (32 rmi) of the Nolichucky River from rkm 14 (rmi 9), approximately 0.6 rkm (0.4 rmi) upstream of Enka Dam, where it divides Hamblen and Cocke Counties, TN, upstream to its confluence with Pigeon Creek, just upstream of the Highway 321 Bridge crossing, in Greene County, TN. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by both species at the time of listing. The fluted kidneyshell population is a

result of a successful reintroduction program implemented by TWRA and other conservation partners. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings, road easements, and a small portion that is within Mullins Island Wildlife Management Area. A portion of this unit (8 rkm (5 rmi)) has been designated as a critical habitat for the oyster mussel and Cumberlandian combshell (69 FR 53136).

The channel within Unit FK18 and SP6 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the slabside pearlymussel and the fluted kidneyshell, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell, slabside pearlymussel, and their habitats may require special management considerations or protection to address potential adverse effects associated with agricultural activities, silviculture-related activities, rock mining, lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution originating in headwater reaches.

Unit FK19: Holston River, Knox, Grainger, and Jefferson Counties, Tennessee

Unit FK19 includes approximately 85 rkm (53 rmi) of the Holston River from its confluence with the French Broad River in Knox County, TN, upstream to the base of Cherokee Dam at rkm 83.7 (rmi 52.3) along the Grainger and Jefferson County, TN, line. The unit is within the Tennessee River system. This unit is considered unoccupied by the fluted kidneyshell and slabside pearlymussel, but within the species' historical ranges.

Live fluted kidneyshell have not been collected in the Holston River since the early 1900s (Ortmann 1918, p. 614). As discussed below, we consider Unit FK19 essential for the conservation of the fluted kidneyshell, but not the slabside pearlymussel, and so it is designated as critical habitat only for the fluted kidneyshell. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements. The unit completely overlaps a designated nonessential experimental population for 15 mussels, 1 snail, and 5 fishes (72 FR 52434).

We consider this unit essential for the conservation of the fluted kidneyshell due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events. Although live fluted kidneyshell have not been collected in the Holston River since the early 1900s (Ortmann 1918, p. 614), the Tennessee Valley Authority (TVA) has improved conditions for aquatic species within this unit. Between 1988 and 1995, TVA implemented reservoir release improvements below Cherokee Dam on the Holston River. These improvements included the establishment of minimum flows and increasing the amount of dissolved oxygen in the tailwater below the reservoir (Scott *et al.* 1996, p. 21).

The unit currently supports populations of three federally listed species (threatened snail darter and endangered pink mucket and sheepsnose). In addition, other mussel species co-occur with these species along with a diverse fish fauna, including hosts for the fluted kidneyshell. These host fishes are bottom-dwelling species that are able to move into refugia of low flows during high discharges from the hydropower dam upstream. Therefore, the fluted kidneyshell glochidia may come into contact and infest the host fishes. The slabside pearlymussel and its host fishes are known from the Holston

River drainage; however, hydropower operations make this habitat unsuitable for mid-water column fishes, such as the shiners that are hosts for the slabside pearlymussel (Layzer and Scott 2006, pp. 481, 488–9). Therefore, we are not designating Unit FK19 as critical habitat for the slabside pearlymussel at this time.

Unit FK20: French Broad River, Knox and Sevier Counties, Tennessee

Unit FK20 includes approximately 56 rkm (35 rmi) of the French Broad River from its confluence with the Holston River in Knox County, TN, upstream to the base of Douglas Dam at rkm 51.7 (rmi 32.3) in Sevier County, TN. The unit is within the Tennessee River system. This unit is considered unoccupied by the fluted kidneyshell and slabside pearlymussel, but within the species' historical ranges. Fluted kidneyshell are only known from archaeological records in the French Broad River (Parmalee 1988 in Layzer and Scott 2006, pp. 481-482). As discussed below, we consider Unit FK20 essential for the conservation of the fluted kidneyshell, but not the slabside pearlymussel, and so it is designated as critical habitat only for the fluted kidneyshell. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements and a small portion that is within Forks of the River Wildlife Management Area. The unit completely overlaps a NEP for 15 mussels, 1 snail, and 5 fishes (72 FR 52434).

We consider this unit essential for the conservation of the fluted kidneyshell due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events. Fluted kidneyshell are only known from archaeological records in the French Broad River (Parmalee 1988 in Layzer and Scott

2006, pp. 481-482). However, between 1987 and 1995, TVA implemented reservoir release improvements below Douglas Dam on the French Broad River. These improvements included the establishment of minimum flows and increasing the amount of dissolved oxygen in the tailwater below the reservoir (Scott *et al.* 1996, pp. 11-12), improving conditions for the fluted kidneyshell and other aquatic species.

The unit does currently support populations of the federally threatened snail darter and endangered pink mucket. In addition, other mussel species co-occur with these species and a diverse fish fauna, including hosts for the fluted kidneyshell. These host fishes are bottom-dwelling species that are able to move into refugia of low flows during high discharges from the hydropower dam upstream. Therefore, the fluted kidneyshell glochidia may come into contact and infest the host fishes. The slabside pearlymussel and its host fishes are known from the French Broad River drainage; however, hydropower operations make this habitat unsuitable for mid-water column fishes, such as the shiners that are hosts for the slabside pearlymussel (Layzer and Scott 2006, pp. 481, 488–9). Therefore, we are not designating Unit FK20 as critical habitat for the slabside pearlymussel at this time.

Unit FK21 and SP7: Hiwassee River, Polk County, Tennessee

Unit FK21 and SP7 includes approximately 24 rkm (15 rmi) of the Hiwassee River from the Highway 315 Bridge crossing upstream to the Highway 68 Bridge crossing in Polk County, TN. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by slabside pearlymussel at the time of listing. This

unit is considered unoccupied by the fluted kidneyshell at the time of listing, but within the species' historical range. Fluted kidneyshell are only known from archaeological records in the Hiwassee River (Parmalee and Bogan 1998, p. 205). This unit is considered essential for the conservation of the fluted kidneyshell (see *Criteria Used To Identify Critical Habitat* above for our rationale). A portion of this unit is considered a “cut-off” reach, because most of the water flow bypasses the reach through a tunnel from Apalachia Dam to the Apalachia powerhouse for the production of electricity. This unit is located entirely on federal lands within the Cherokee National Forest (CNF). Land and resource management decisions and activities within the CNF are guided by CNF's LRMP (USFS 2004b, pp. 28-37, entire).

The channel within Unit FK21 and SP7 has an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2). Diverse fish fauna, including fish hosts for the slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the slabside pearlymussel and its habitats may require special management considerations or protection to address potential adverse effects associated with silviculture-related activities, nonpoint source pollution, water diversion through Apalachia tunnel, and potential canopy loss caused by infestations of the hemlock woolly adelgid. Another threat to the species and their habitat which may require special management of the PCEs is the potential for significant changes in the existing flow regime and water quality due to upstream impoundment. As discussed in the final listing rule published elsewhere in today's **Federal Register** under **Summary of Factors Affecting the Species**, “Impoundments,” mollusk declines below dams are associated with changes and fluctuation in flow regime, scouring and erosion, reduced dissolved

oxygen levels and water temperatures, and changes in resident fish assemblages. These alterations can cause mussel declines for many miles below the dam.

Unit SP8: Sequatchie River, Marion, Sequatchie, and Bledsoe Counties, Tennessee

Unit SP8 includes approximately 151 rkm (94 rmi) of the Sequatchie River from the Highway 41, 64, 72, 2 Bridge crossing in Marion County, TN, upstream to the Ninemile Cross Road Bridge crossing in Bledsoe County, TN. The unit is within the Tennessee River system. This unit is included in the geographical area occupied by slabside pearlymussel at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements.

Unit SP8 has an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the slabside pearlymussel and its habitat may require special management considerations or protection to address potential adverse effects caused by agricultural activities, coal mining, silvicultural activities, lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution arising from a wide variety of human activities.

Unit SP9: Paint Rock River, Madison, Marshall, and Jackson Counties, Alabama

Unit SP9 includes approximately 86 rkm (53 rmi) of the Paint Rock River from

the Highway 431 Bridge crossing along the Madison and Marshall County line, AL, upstream to the confluence of Estill Fork and Hurricane Creek in Jackson County, AL. The unit includes approximately 11 rkm (7 rmi) of Larkin Fork from its confluence with the Paint Rock River upstream to its confluence with Bear Creek, in Jackson County, AL; approximately 13 rkm (8 rmi) of Estill Fork from its confluence with the Paint Rock River upstream to its confluence with Bull Run in Jackson County, AL; and approximately 16 rkm (10 rmi) of Hurricane Creek from its confluence with the Paint Rock River upstream to its confluence with Turkey Creek in Jackson County, AL. The unit is within the Tennessee River system and is critical habitat for the slabside pearl mussel. The unit is included in the geographical area occupied by the slabside pearl mussel at the time of listing. Approximately 6 rkm (4 rmi) of this unit is federally or State-owned and adjacent to the Fern Cave National Wildlife Refuge and Walls of Jericho State Management Area; the remainder is privately owned, including a small parcel owned by the Alabama Land Trust. A portion of this unit (80 rkm (50 rmi)) is critical habitat for the rabbitsfoot (78 FR 57076).

The channel within Unit SP9 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the slabside pearl mussel, are known from this unit (PCE 5).

Within this unit, the slabside pearl mussel and its habitat may require special management considerations or protection to address potential adverse effects associated with agricultural activities, silvicultural activities, off-road vehicle use and other

recreational activities, and nonpoint source pollution originating in headwater reaches.

Unit FK22 and SP10: Elk River, Limestone County, Alabama, and Giles, Lincoln, Franklin, and Moore Counties, Tennessee

Unit FK22 and SP10 includes approximately 164 rkm (102 rmi) of the Elk River from its inundation at Wheeler Lake in Limestone County, AL, upstream to its confluence with Farris Creek at the dividing line between Franklin and Moore Counties, TN. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by slabside pearlymussel at the time of listing. This unit is considered unoccupied by the fluted kidneyshell, but within the species' historical range. Live fluted kidneyshell have not been collected in the Elk River since the late-1960s (Isom *et al.* 1973, p. 440). The unit is considered essential for the conservation of the fluted kidneyshell (see *Criteria Used To Identify Critical Habitat* above for our rationale). This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements and a small portion that is within TVA-owned lands near Wheeler Reservoir.

Unit FK22 and SP10 has an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the slabside pearlymussel and its habitats may require special management considerations or protection to address potential adverse effects associated

with hydropower generation from Tims Ford Dam, agriculture, nonpoint source pollution, and instream gravel mining. Another threat to the species and their habitat which may require special management of the PBFs is the potential for significant changes in the existing flow regime and water quality due to upstream impoundment. As discussed in the final listing rule published elsewhere in today's **Federal Register** under **Summary of Factors Affecting the Species**, "Impoundments," mollusk declines below dams are associated with changes and fluctuation in flow regime, scouring and erosion, reduced dissolved oxygen levels and water temperatures, and changes in resident fish assemblages. These alterations can cause mussel declines for many miles below the dam.

Unit SP11: Bear Creek, Colbert County, Alabama, and Tishomingo County, Mississippi

Unit SP11 includes approximately 42 rkm (26 rmi) of Bear Creek from its inundation at Pickwick Lake at rkm 37 (rmi 23) in Colbert County, AL, upstream through Tishomingo County, MS, and ending at the Mississippi/Alabama State line. The unit is within the Tennessee River system and is critical habitat for the slabside pearlymussel. This unit is included in the geographical area occupied by the slabside pearlymussel at the time of listing. This unit is located almost entirely on private land, except for any small amount that is publicly owned in the form of bridge crossings and road easements, and that within Tishomingo State Park and the Natchez Trace Parkway. The unit completely overlaps critical habitat for the oyster mussel and Cumberlandian combshell (69 FR 53136), and overlaps with a portion (42 rkm (26 rmi)) of the critical habitat unit for the rabbitsfoot (78 FR 57076).

The channel within Unit SP11 has an abundance of riffle habitats (PCE 1), with

relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the slabside pearlymussel and its habitat may require special management considerations or protection to address potential adverse effects associated with releases from upstream impoundments, agriculture, and nonpoint source pollution originating in headwater reaches.

Unit FK23 and SP12: Duck River, Humphreys, Perry, Hickman, Maury, Marshall, and Bedford Counties, Tennessee

Unit FK23 and SP12 includes approximately 348 rkm (216 rmi) of the Duck River from its inundation at Kentucky Lake in Humphreys County, TN, upstream to its confluence with Flat Creek near Shelbyville in Bedford County, TN. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by both species at the time of listing. The fluted kidneyshell population is a result of a successful reintroduction program implemented by TWRA and other conservation partners, resulting in the recruitment of the species in the Duck River. Approximately 64 rkm (39 rmi) of this unit is federally or State-owned and adjacent to the Tennessee National Wildlife Refuge, Natchez Trace Parkway, Yanahli Wildlife Management Area, and Henry Horton State Park; the remainder is privately owned. A portion of this unit (74 rkm (46 rmi)) has been designated as a critical habitat for the oyster mussel and Cumberlandian combshell (69 FR 53136) and a portion of this unit (235 rkm (146 rmi))

is critical habitat for the rabbitsfoot (78 FR 57076).

The channel within Unit FK23 and SP12 is relatively stable, with suitable instream habitat (PCE 1). There is an abundance of riffle habitats (PCE 1), with relatively silt-free sand and gravel substrates (PCE 2), and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the fluted kidneyshell and slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the fluted kidneyshell, slabside pearlymussel, and their habitats may require special management considerations or protection to address potential adverse effects associated with agricultural activities (livestock), water withdrawals, lack of adequate riparian buffers, construction and maintenance of State and county roads, and nonpoint source pollution originating in headwater reaches.

Unit FK24 and SP13: Buffalo River, Humphreys and Perry Counties, Tennessee

Unit FK24 and SP13 includes approximately 50 rkm (31 rmi) of the Buffalo River from its confluence with the Duck River in Humphreys County, TN, upstream to its confluence with Cane Creek in Perry County, TN. The unit is within the Tennessee River system and is critical habitat for the fluted kidneyshell and slabside pearlymussel. This unit is included in the geographical area occupied by slabside pearlymussel at the time of listing. This unit is considered unoccupied by the fluted kidneyshell, but within the species' historical range. Live fluted kidneyshell have not been collected in the Buffalo River since the early 1920s (Ortmann 1924, p. 28). The unit is considered essential for the conservation of the fluted kidneyshell (see *Criteria Used To Identify Critical Habitat* above for our rationale). This unit is located almost entirely on private

land, except for any small amount that is publicly owned in the form of bridge crossings and road easements.

Unit FK24 and SP13 has an abundance of riffle habitats (PCE 1) and adequate instream flows (PCE 3). A diverse fish fauna, including fish hosts for the slabside pearlymussel, are known from this unit (PCE 5).

Within this unit, the slabside pearlymussel and its habitats may require special management considerations or protection to address potential adverse effects associated with agriculture, destabilized substrates, and nonpoint source pollution.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species listed under the Act or result in the destruction or adverse modification of designated critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeal have invalidated our regulatory definition of “destruction or adverse modification” (50 CFR 402.02) (see

Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service, 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service*, 245 F.3d 434 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the provisions of the Act, the key factor in determining whether an action will destroy or adversely modify critical habitat is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the CWA (33 U.S.C. 1251 *et. seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

- (1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or
- (2) A biological opinion for Federal actions that may affect, or are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

- (1) Can be implemented in a manner consistent with the intended purpose of the action;
- (2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction;
- (3) Are economically and technologically feasible; and
- (4) Would, in the Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency’s discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions

for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the “Adverse Modification” Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the PBFs to an extent that appreciably reduces the conservation value of critical habitat for fluted kidneyshell or slabside pearlymussel. As discussed above, the role of critical habitat is to support life-history needs and provide for the conservation of these species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the fluted kidneyshell or slabside pearlymussel. These activities include, but are not limited to:

- (1) Actions that would alter the geomorphology of their stream and river habitats. Such activities could include, but are not limited to, instream excavation or dredging, impoundment, channelization, sand and gravel mining, clearing riparian

vegetation, and discharge of fill materials. These activities could cause aggradation or degradation of the channel bed elevation or significant bank erosion and result in entrainment or burial of these mussels and could cause other direct or cumulative adverse effects to these species and their life cycles.

(2) Actions that would significantly alter the existing flow regime where these species occur. Such activities could include, but are not limited to, impoundment, urban development, water diversion, water withdrawal, water draw-down, and hydropower generation. These activities could eliminate or reduce the habitat necessary for growth and reproduction of these mussels and their fish hosts.

(3) Actions that would significantly alter water chemistry or water quality (e.g., temperature, pH, contaminants, and excess nutrients). Such activities could include, but are not limited to, hydropower discharges, or the release of chemicals, biological pollutants, or heated effluents into surface water or connected groundwater at a point source or by dispersed release (nonpoint source). These activities could alter water conditions that are beyond the tolerances of these mussels and their fish hosts or both, and result in direct or cumulative adverse effects to the species throughout their life cycles.

(4) Actions that would significantly alter stream bed material composition and quality by increasing sediment deposition or filamentous algal growth. Such activities could include, but are not limited to, construction projects, gravel and sand mining, oil and gas development, coal mining, livestock grazing, timber harvest, and other watershed and floodplain disturbances that release sediments or nutrients into the water. These activities could eliminate or reduce habitats necessary for the growth and reproduction of

these mussels or their fish hosts or both, by causing excessive sedimentation and burial of the species or their habitats, or eutrophication leading to excessive filamentous algal growth. Excessive filamentous algal growth can cause reduced nighttime dissolved oxygen levels through respiration, and prevent juvenile mussels from settling into stream sediments.

Exemptions

Application of Section 4(a)(3) of the Act

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that: “The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan [INRMP] prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.”

There are no Department of Defense lands with a completed INRMP within the critical habitat designation. Therefore, we are not exempting any lands from this final designation of critical habitat for the fluted kidneyshell or slabside pearlymussel pursuant to section 4(a)(3)(B)(i) of the Act.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise her discretion to exclude the area only if such exclusion would not result in the extinction of the species.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we prepared a DEA of the proposed critical habitat designation and related factors (RTI International 2013a). The draft analysis was made available for public review from April 29 through May 29, 2013 (78 FR 25041). Following the close of the comment period, a final analysis of the potential economic effects of the designation (FEA) was developed, taking into consideration the public comments and any new information (RTI International 2013b). The FEA is summarized below and is available at <http://www.regulations.gov> or by contacting the Tennessee Ecological Services Field Office directly (see **FOR FURTHER INFORMATION CONTACT**).

The intent of the FEA is to evaluate the economic impacts of all potential conservation efforts for the fluted kidneyshell and slabside pearlymussel; some of these costs will likely be incurred regardless of whether we designate critical habitat (baseline). The economic impact of the final critical habitat designation is analyzed by comparing scenarios both “with critical habitat” and “without critical habitat.” The “without critical habitat” scenario represents the baseline for the analysis, considering protections already in place for the species (e.g., under the Federal listing and other Federal, State, and local regulations). The baseline, therefore, represents the costs incurred regardless of whether critical habitat is designated. The “with critical habitat” scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts are those not

expected to occur absent the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat above and beyond the baseline costs; these are the costs we consider in the final designation of critical habitat. The analysis forecasts both baseline and incremental impacts likely to occur with the designation of critical habitat. The FEA provides estimated costs of the foreseeable potential economic impacts of the critical habitat designation for these two species over the next 20 years, which was determined to be the appropriate period for analysis because planning information available to forecast activity levels for projects beyond a 20-year timeframe is limited.

The FEA also addresses how potential economic impacts are likely to be distributed, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation activities on government agencies, private businesses, and individuals. Decision-makers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. The FEA quantifies economic impacts of fluted kidneyshell and slabside pearlymussel conservation efforts related to section 7 consultation for the following categories of activity: (1) Road maintenance and construction; (2) dam operation; (3) commercial, industrial, residential, and associated utility development; (4) agricultural and recreational development; (5) mining; (6) Federal management plan administration; (7) State water quality standards; and (8) restoration and conservation. The FEA evaluates potential economic impacts of the designation, considering land ownership, reasonably foreseeable land use activities, potential Federal agency actions within the area and section 7 consultation requirements, baseline conservation measures

(i.e., measures that would be implemented regardless of the critical habitat designation), and incremental conservation measures (i.e., measures that would be attributed exclusively to the critical habitat designation).

The present value of the total incremental cost of critical habitat designation is estimated in the FEA at \$3.5 million over 20 years assuming a 7 percent discount rate, or \$175,000 on an annualized basis. Road maintenance and construction activities are likely to be subject to the greatest incremental impacts at \$1.94 million over 20 years, followed by commercial, industrial, residential, and associated utility development at \$1.1 million; restoration and conservation at \$221,000; mining at \$132,000; agricultural and recreational development at \$75,900; Federal management plan administration at \$24,200; dam operation at \$21,500; and State water quality standards at \$6,800. Approximately 55 percent of direct incremental costs are estimated to result from future consultations for road maintenance and construction projects. Please refer to the FEA (<http://www.regulations.gov> at Docket No. FWS–R4–ES–2013–0026) for a more detailed discussion of potential economic impacts.

An additional \$400,000 in indirect incremental costs associated with water quality permitting for road maintenance and construction is estimated for the unoccupied Unit FK3 (Rockcastle River, Kentucky). Approximately 75 percent of the indirect incremental costs are estimated to result from consultations in the three units that are not occupied by other federally listed species (i.e., Wolf River and Town Branch, and West Fork Obey River, TN).

The FEA did not identify any disproportionate costs that are likely to result from the designation. Consequently, the Secretary is not exerting her discretion to exclude any

areas from this designation of critical habitat for the fluted kidneyshell or slabside pearlymussel based on economic impacts.

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense where a national security impact might exist. In preparing this final rule, we have determined that no lands within the designation of critical habitat for the fluted kidneyshell and slabside pearlymussel are owned or managed by the Department of Defense, and, therefore, we anticipate no impact on national security. Consequently, the Secretary is not exerting her discretion to exclude any areas from the final designation based on impacts on national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors, including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any tribal issues, and consider the government-to-government relationship of the United States with tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this final rule, we have determined that there are currently no HCPs or other management plans that specifically address management needs for the fluted kidneyshell or slabside pearlymussel, and the final designation does not include any tribal lands or trust resources. Therefore, we anticipate no impact on tribal lands, HCPs, or other management plans from this critical habitat designation. Accordingly, the Secretary is not exercising her discretion to exclude any areas from the final designation based on other relevant impacts.

Nonessential Experimental Populations

Section 10(j) of the Act provides for the designation of specific reintroduced populations of listed species as “experimental populations.” This section was designed to provide us with an innovative means to introduce a listed species into unoccupied habitat within its historical range when doing so would foster the conservation and recovery of the species. Experimental populations provide us with a flexible, proactive means to meet recovery criteria while maintaining the cooperation of stakeholders, such as other agencies, municipalities, and landowners, which is essential for eventual success of the reintroduced population.

When we designate a population as experimental, section 10(j) of the Act requires that we determine whether that population is either essential or nonessential to the continued existence of the species, on the basis of the best available information. Nonessential experimental populations (NEPs) located outside National Wildlife Refuge System or National Park System lands are treated, for the purposes of section 7 of the Act, as if they are proposed for listing as a threatened species, while within National

Wildlife Refuges or National Parks the species is treated as a threatened species.

Threatened status allows us to develop special regulations under section 4(d) of the Act that we consider necessary and advisable for the protection of the species. Moreover, section 7(a)(2) of the Act, which requires Federal agencies to ensure that their activities are not likely to jeopardize the continued existence of a listed species, would apply to the populations on National Wildlife Refuge System and National Park System lands. On the other hand, experimental populations determined to be “essential” to the survival of the species would be treated as threatened species and remain subject to the consultation provisions of section 7(a)(2) of the Act, whether or not they are located on national wildlife refuges or parks.

As mentioned earlier in the unit descriptions and referenced in Table 3, there are two NEPs for other listed aquatic species that overlap with this critical habitat designation: the NEP for the yellowfin madtom in the North Fork of the Holston River (53 FR 29335), which overlaps with Units FK12 and SP1, and the NEP for 21 listed aquatic species (including the yellowfin madtom) in the lower French Broad and Holston Rivers (72 FR 52434), which overlaps with Units FK19 and FK20. These NEPs were not established specifically for the conservation of the fluted kidneyshell or slabside pearl mussel, which were candidate species when the NEP rules were published, but rather to promote the reintroduction of their target listed species into historical habitat. The NEPs would have to be amended through a rulemaking process to include the fluted kidneyshell or slabside pearl mussel.

The North Fork of the Holston River is considered occupied by both the slabside pearl mussel and the fluted kidneyshell, presently contains numerous PCEs (see **Final**

Critical Habitat Designation above), and is therefore being designated as critical habitat. The lower Holston River (below Cherokee Dam) and French Broad River (below Douglas Dam) are being designated as unoccupied habitat for the fluted kidneyshell because we have determined these river reaches are essential to the conservation of the species (see *Criteria Used To Identify Critical Habitat* above for our rationale). Both rivers provide some of the last remaining large river habitat for the fluted kidneyshell. Since the NEPs do not provide any level of protection to the fluted kidneyshell or slabside pearl mussel, the Secretary is not exercising her discretion to exclude any areas from the final designation based on the presence of existing NEPs.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory

objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C 801 *et seq.*), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. In this final rule, we are certifying that the critical habitat designation for fluted kidneyshell and slabside pearlymussel will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental

jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include such businesses as manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts on these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule, as well as the types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm’s business operations.

Importantly, the incremental impacts of a rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of an initial regulatory flexibility analysis. If a substantial number of small entities are affected by the critical habitat designation, but the per-entity economic impact is not significant, the Service may certify. Likewise, if the per-entity economic impact is likely to be significant, but the number of affected entities is not substantial, the Service may also certify.

The Service’s current understanding of recent case law is that Federal agencies are only required to evaluate the potential impacts of rulemaking on those entities directly regulated by the rulemaking; therefore, they are not required to evaluate the potential impacts to those entities not directly regulated. The designation of critical habitat for an

endangered or threatened species only has a regulatory effect where a Federal action agency is involved in a particular action that may affect the designated critical habitat. Under these circumstances, only the Federal action agency is directly regulated by the designation, and, therefore, consistent with the Service's current interpretation of RFA and recent case law, the Service may limit its evaluation of the potential impacts to those identified for Federal action agencies. Under this interpretation, there is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated, such as small businesses. However, Executive Orders 12866 and 13563 direct Federal agencies to assess costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consequently, it is the current practice of the Service to assess to the extent practicable these potential impacts if sufficient data are available, whether or not this analysis is believed by the Service to be strictly required by the RFA. In other words, while the effects analysis required under the RFA is limited to entities directly regulated by the rulemaking, the effects analysis under the Act, consistent with the E.O. regulatory analysis requirements, can take into consideration impacts to both directly and indirectly impacted entities, where practicable and reasonable.

In conclusion, based on our interpretation of directly regulated entities under the RFA and relevant case law, this designation of critical habitat will only directly regulate Federal agencies which are not by definition small business entities. As such, we certify that this designation of critical habitat will not have a significant economic impact on a substantial number of small business entities. Therefore, a regulatory flexibility analysis is not required. However, though not necessarily required by the RFA, in our FEA for this rule we considered and evaluated the potential effects to third parties that may be

involved with consultations with Federal action agencies related to this action.

Designation of critical habitat only affects activities authorized, funded, or carried out by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species are present, Federal agencies already are required to consult with us under section 7 of the Act on activities they authorize, fund, or carry out that may affect fluted kidneyshell or slabside pearlymussel. Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat, therefore, could result in an additional economic impact on small entities due to the requirement to reinstate consultation for ongoing Federal activities (see *Application of the “Adverse Modification” Standard* section).

In our FEA of the critical habitat designation (see “Exclusions Based on Economic Impacts,” above), we evaluated the potential economic effects on small business entities resulting from conservation actions related to the designation of critical habitat of the fluted kidneyshell and slabside pearlymussel (RTI 2013). The analysis is based on the estimated impacts associated with the rulemaking as described in Appendix A of the FEA and evaluates the potential for economic impacts related to: Commercial, industrial, residential, and associated utility development; agricultural and recreational development; mining; and restoration and conservation.

The incremental costs over 20 years at a 7 percent discount rate for project proponents in unoccupied critical habitat units are estimated to be: \$785,802 for commercial, industrial, residential, and associated utility development; \$26,395 for agricultural and recreational development; \$6,169 for mining; and \$89,927 for restoration

and conservation. In summary, this FEA estimates a worst case scenario of approximately \$908,000 in impacts to all small businesses within the study region over 20 years, discounted at 7 percent, with an annualized cost of approximately \$85,736 across all entities. It is unlikely that increased annual costs at these levels will have a significant impact on small entities in either occupied or unoccupied critical habitat units. Please refer to the FEA of the critical habitat designation for a more detailed discussion of potential economic impacts (RTI 2013).

In summary, we considered whether this designation will result in a significant economic effect on a substantial number of small entities. Based on the above reasoning and currently available information, we conclude that this rule will not result in a significant economic impact on a substantial number of small entities. Therefore, we are certifying that the designation of critical habitat for fluted kidneyshell and slabside pearlymussel will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute “a significant adverse effect” when compared to not taking the regulatory action under consideration, which include: (1) Reductions in crude oil supply in excess of 10,000 barrels per day; (2)

reductions in fuel production in excess of 4,000 barrels per day; (3) reductions in coal production in excess of 5 million tons per year; (4) reductions in natural gas production in excess of 25 million cubic feet per year; (5) reductions in electricity production in excess of 1 billion kilowatt hours per year or in excess of 500 megawatts of installed capacity; (6) increases in energy use required by the regulatory action that exceed thresholds (1) through (6) above; (7) increases in the cost of energy production in excess of one percent; (8) increases in the cost of energy distribution in excess of one percent; and (9) other similarly adverse outcomes.

Appendix A of the FEA discusses the potential for critical habitat to affect the energy industry through the additional cost of considering adverse modification in section 7 consultation. For coal production, we estimated incremental costs of \$132,000 over the next 20 years (7 percent discount rate), with 11 consultations anticipated annually. Based on crude oil and natural gas production levels occurring within critical habitat units and consultation history for these activities, we do not expect the designation of critical habitat for these two species to reduce production in excess of “significant adverse effects” levels set by OMB. Finally, critical habitat designation is not expected to result in the closure of any hydroelectric facilities, so impacts to generation capacity are not anticipated. Total incremental costs to hydroelectric dams are estimated at approximately \$21,000 over 20 years (7 percent discount rate). Overall, the additional costs are unlikely to increase the costs of energy production or distribution in the United States in excess of one percent.

The energy analysis completed in the FEA and summarized above highlights no significant adverse impacts to energy production in any of the major sectors. Thus, based

on information in the economic analysis, no energy-related impacts associated with fluted kidneyshell and slabside pearlymussel conservation activities within critical habitat are expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a regulation that “would impose an enforceable duty upon State, local, or [T]ribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and [T]ribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or tribal governments “lack authority” to adjust

accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children (AFDC) work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7 of the Act. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) This rule will not significantly or uniquely affect small governments because these mussel species occur primarily in State-owned river channels or in remote privately owned stream channels. The designation of critical habitat imposes no obligations on

State or local governments. By definition, Federal agencies are not considered small entities, although the activities they fund or permit may be proposed or carried out by small entities. Consequently, the critical habitat designation will not significantly or uniquely affect small government entities. Therefore, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the fluted kidneyshell and slabside pearlymussel in a takings implications assessment.

Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. Based on the best available information, the takings implications assessment concludes that the designation of critical habitat for the fluted kidneyshell and slabside pearlymussel does not pose significant takings implications.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required.

In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this critical habitat designation with appropriate State resource agencies in Alabama, Kentucky, Mississippi, Tennessee, and Virginia. We did not receive any comments from any State agencies on the proposed rule. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical and biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist these local governments in long-range planning (because these local governments no longer have to wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests

squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, the rule identifies the elements of PBFs essential to the conservation of the fluted kidneyshell and slabside pearlymussel. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 22951), E.O. 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes.

We have determined that there are no Tribal lands currently occupied by the

species that contain the PBFs essential to the conservation of these species, and no Tribal lands unoccupied by the fluted kidneyshell and slabside pearlymussel that are essential for the conservation of these two species. Therefore, we are not designating critical habitat for these species on Tribal lands.

References Cited

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Tennessee Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rule are the staff members of the Tennessee Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245, unless otherwise noted.

2. Amend § 17.11(h) by adding entries for “Kidneyshell, fluted” and “Pearlymussel, slabside” in alphabetical order under “CLAMS” to the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
* * * * *							
CLAMS							
* * * * *							
Kidneyshell, fluted	<i>Ptychobranhus subtentum</i>	U.S.A. (AL, KY, TN, VA)	Entire	E	825	17.95(f)	NA
* * * * *							
Pearlymussel, slabside	<i>Pleuonaia dolabelloides</i>	U.S.A. (AL, KY, MS, TN, VA)	Entire	E	825	17.95(f)	NA
* * * * *							

3. In § 17.95, amend paragraph (f) by adding entries for “Fluted Kidneyshell (*Ptychobranhus subtentum*)” and “Slabside Pearlymussel (*Pleuonaia dolabelloides*)” in that order immediately following the entry for Altamaha spiny mussel (*Elliptio spinosa*), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(f) *Clams and Snails.*

* * * * *

Fluted Kidneyshell (*Ptychobranhus subtentum*)

(1) Critical habitat units are depicted on the maps below for Limestone County, Alabama; Jackson, Laurel, McCreary, Pulaski, Rockcastle, and Wayne Counties, Kentucky; Bedford, Claiborne, Cocke, Fentress, Franklin, Giles, Grainger, Greene, Hamblen, Hancock, Hickman, Humphreys, Jefferson, Knox, Lincoln, Marshall, Maury, Moore, Morgan, Overton, Perry, Pickett, Polk, Scott, and Sevier Counties, Tennessee; and Bland, Lee, Russell, Scott, Smyth, Tazewell, Washington, and Wythe Counties, Virginia.

(2) Within these areas, the primary constituent elements of the physical or biological features essential to the conservation of fluted kidneyshell consist of five components:

(i) Riffle habitats within large, geomorphically stable stream channels (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation).

(ii) Stable substrates of sand, gravel, and cobble with low to moderate amounts of fine sediment and containing flow refugia with low shear stress.

(iii) A natural hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found, and connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability for all life stages, and spawning habitat for native fishes.

(iv) Water quality with low levels of pollutants and including a natural temperature regime, pH (between 6.0 to 8.5), oxygen content (not less than 5.0 milligrams/liter), hardness, and turbidity necessary for normal behavior, growth, and viability of all life stages.

(v) The presence of abundant fish hosts, which may include the barcheek darter, fantail darter, rainbow darter, redline darter, bluebreast darter, dusky darter and banded sculpin, necessary for recruitment of the fluted kidneyshell.

(3) Critical habitat does not include manmade structures (such as buildings,

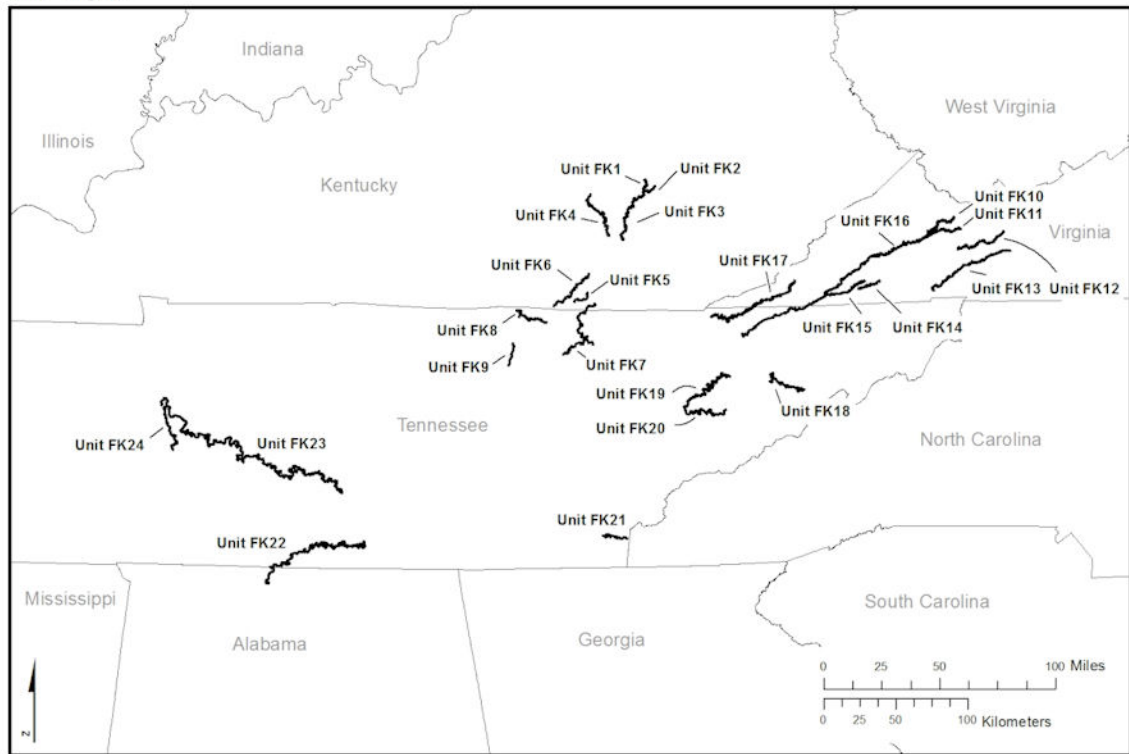
aqueducts, dams, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

(4) *Critical habitat map units.* Data layers defining map units were created with USGS National Hydrography Dataset (NHD⁺) GIS data. The 1:100,000 river reach (route) files were used to calculate river kilometers and miles. ESRI's ArcGIS 10.0 software was used to determine longitude and latitude coordinates using decimal degrees. The projection used in mapping all units was USA Contiguous Albers Equal Area Conic USGS version, NAD 83, meters. The following data sources were referenced to identify features (like roads and streams) used to delineate the upstream and downstream extents of critical habitat units: NHD⁺ flowline and waterbody data, 2011 Navteq roads data, USA Topo ESRI online basemap service, DeLorme Atlas and Gazetteers, and USGS 7.5 minute topographic maps. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the field office Internet site (<http://www.fws.gov/cookeville>), at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2013-0026, and at the Service's Tennessee Fish and Wildlife Office. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) An overview of critical habitat locations for the fluted kidneyshell in

Alabama, Tennessee, Kentucky, and Virginia follows:

Overview of Critical Habitat Locations for the Fluted Kidneyshell in Alabama, Tennessee, Kentucky, and Virginia

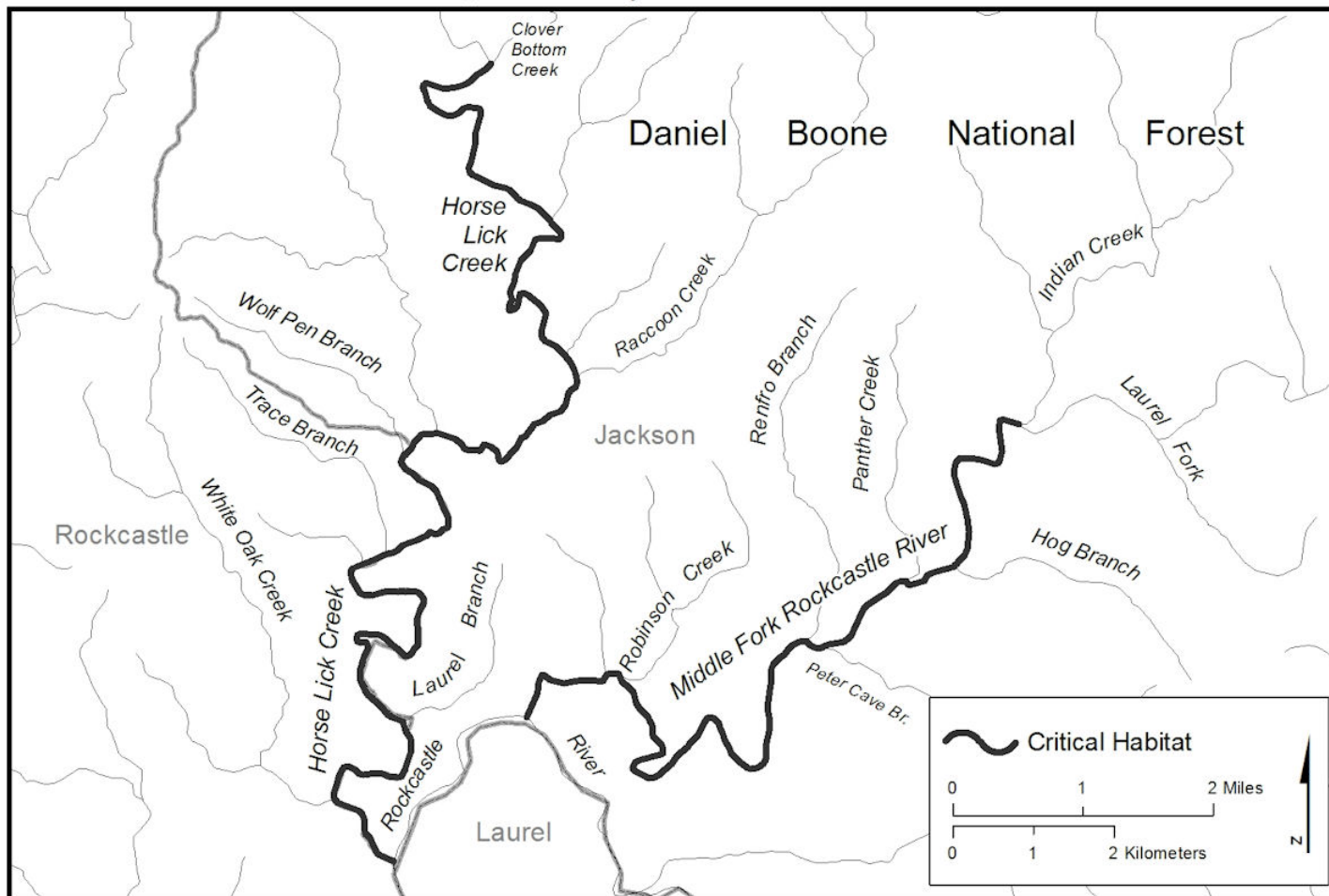


(6) Unit FK1: Horse Lick Creek, Rockcastle and Jackson Counties, Kentucky.

(i) The unit includes approximately 19 river kilometers (rkm) (12 river miles (rmi)) of Horse Lick Creek, in Rockcastle and Jackson Counties, KY. It includes the mainstem of Horse Lick Creek from its confluence with the Rockcastle River (-84.13780, 37.31991) upstream to Clover Bottom Creek (-84.12200, 37.40879).

(ii) Map of Units FK1 and FK2 follows:

Unit FK1: Horse Lick Creek, Fluted Kidneyshell Critical Habitat
Unit FK2: Middle Fork Rockcastle River, Fluted Kidneyshell Critical Habitat



(7) Unit FK2: Middle Fork Rockcastle River, Jackson County, Kentucky.

(i) The unit includes 12.5 rkm (7.7 rmi) of the Middle Fork Rockcastle River from its confluence with the Rockcastle River (-84.11895, 37.33581) upstream to its confluence with Indian Creek and Laurel Fork (-84.04897, 37.36765) in Jackson County, KY.

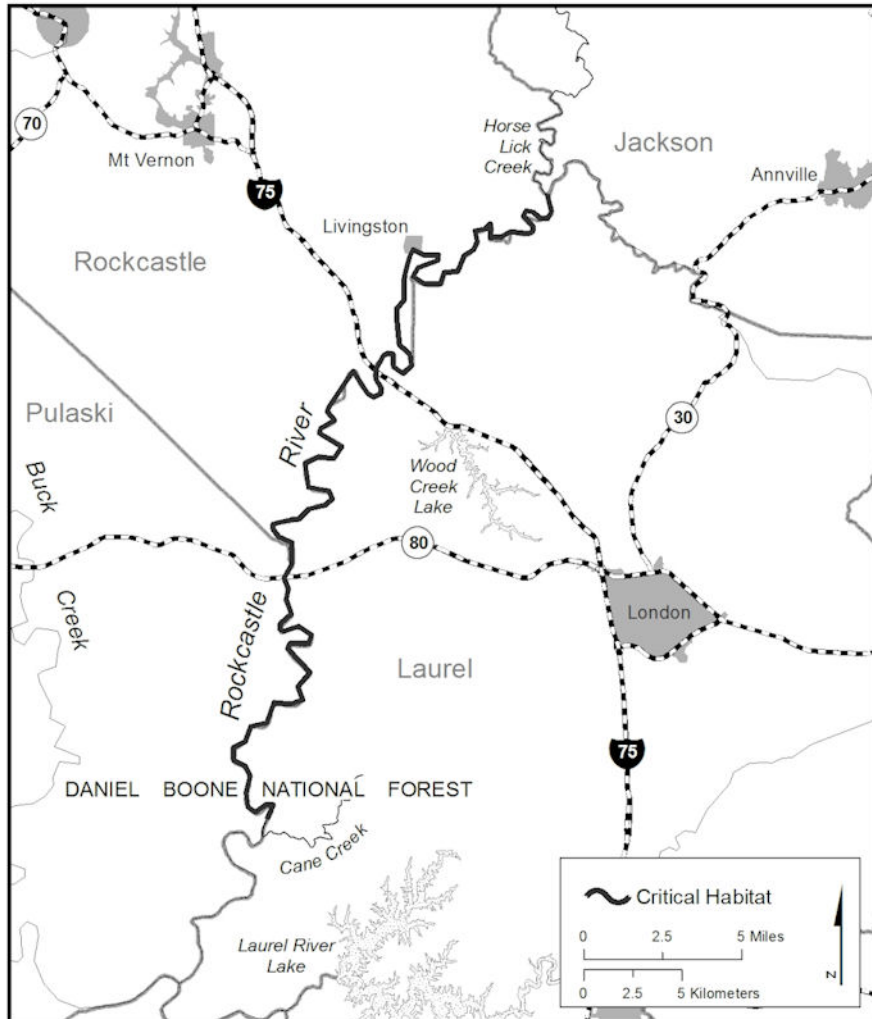
(ii) Map of Units FK1 and FK2 is provided at paragraph (6)(ii) of this entry.

(8) Unit FK3: Rockcastle River, Pulaski, Laurel, and Rockcastle Counties, Kentucky.

(i) The unit includes approximately 70 rkm (43 rmi) of the Rockcastle River from the backwaters of Lake Cumberland near its confluence with Cane Creek along the Laurel and Pulaski County line, KY (-84.30594, 37.03423), upstream to its confluence with Horse Lick Creek along the Laurel and Rockcastle County line, KY (-84.13766, 37.31944).

(ii) Map of Unit FK3 follows:

Unit FK3: Rockcastle River, Fluted Kidneyshell Critical Habitat

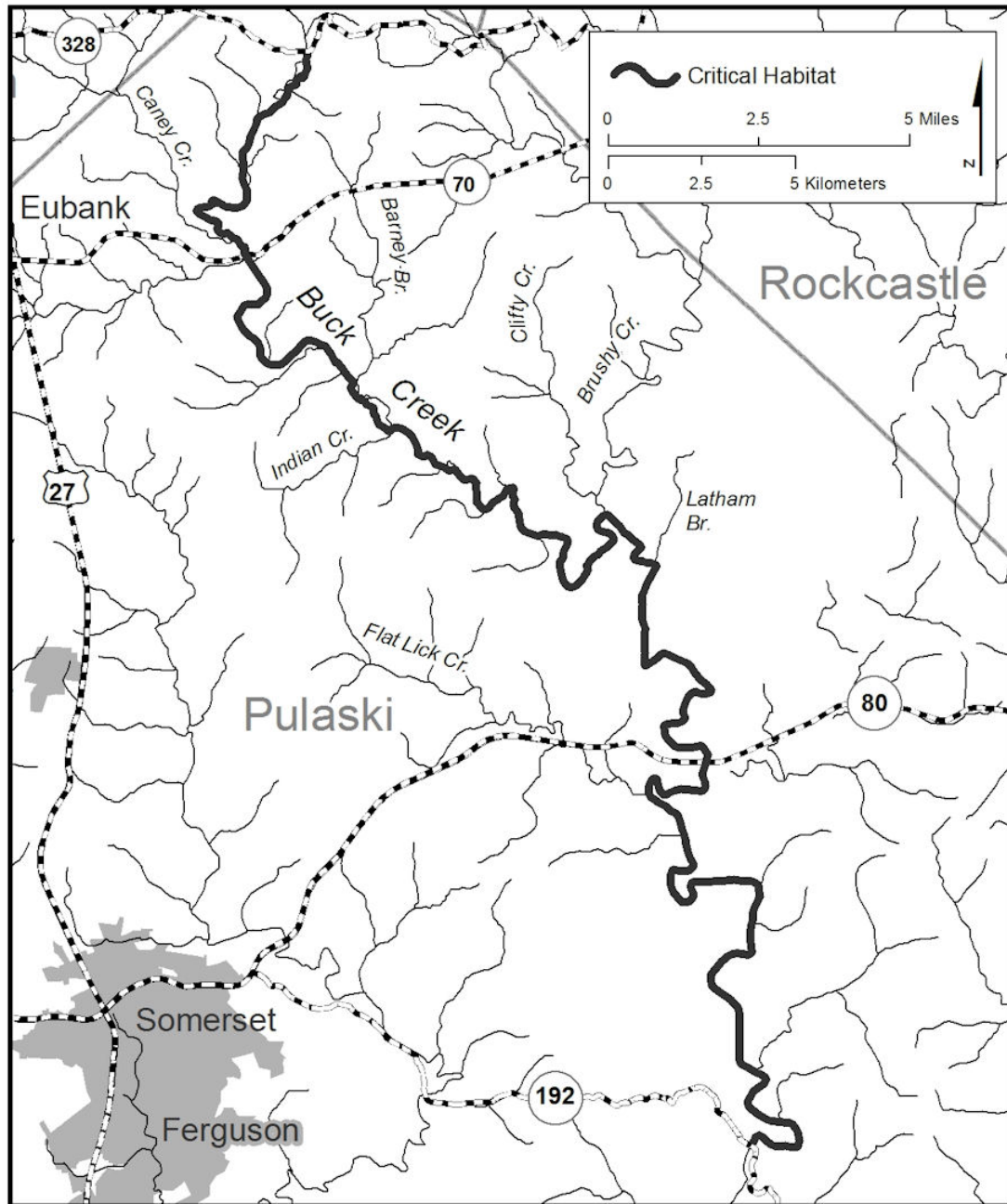


(9) Unit FK4: Buck Creek, Pulaski County, Kentucky.

(i) This unit includes 61 rkm (38 rmi) of Buck Creek from State Route 192 (-84.42681, 37.05977) upstream to Route 328 (-84.55492, 37.32430), Pulaski County, KY.

(ii) Map of Unit FK4 follows:

Unit FK4: Buck Creek, Fluted Kidneyshell Critical Habitat



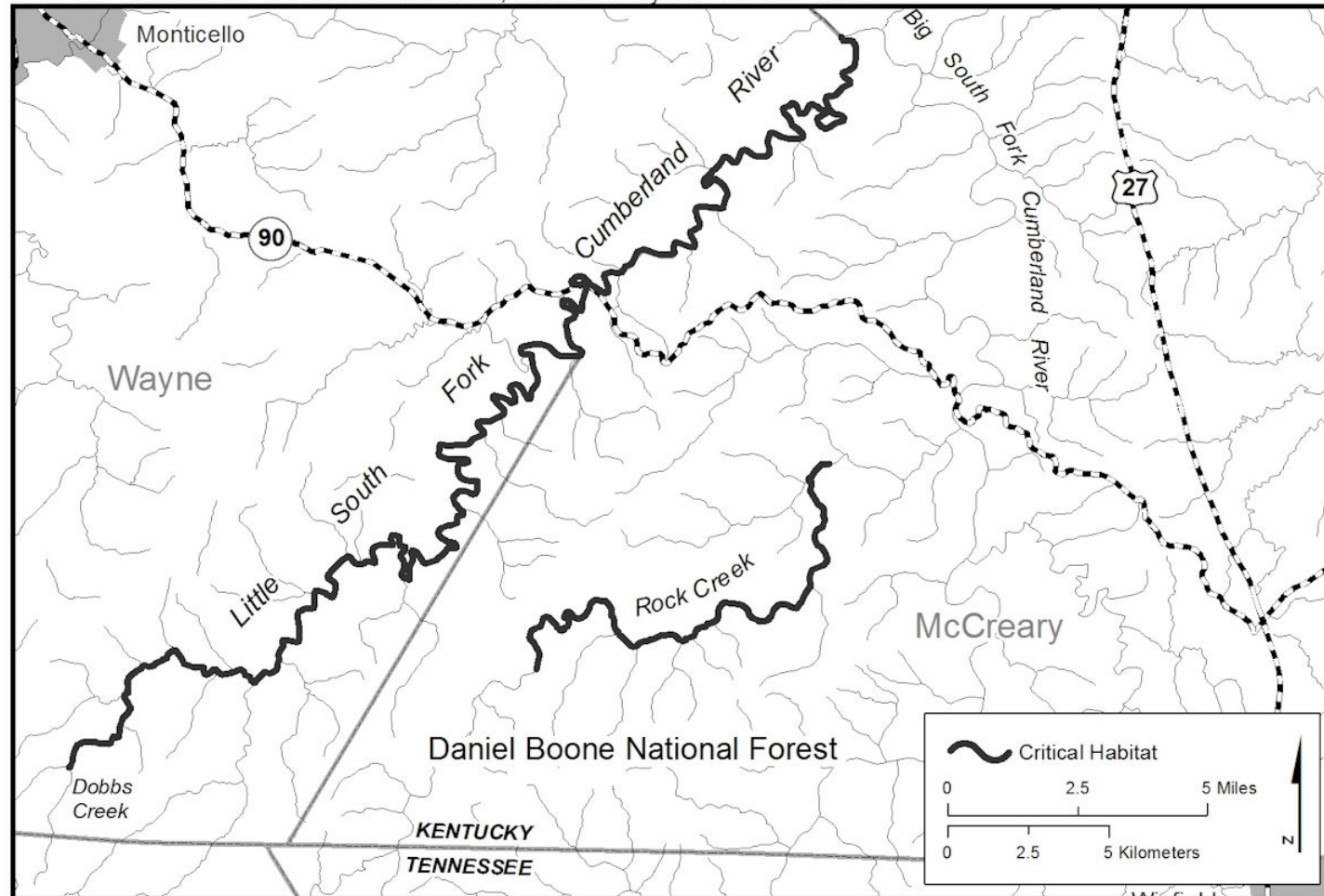
(10) Unit FK5: Rock Creek, McCreary County, Kentucky.

(i) The unit includes approximately 19 rkm (12 rmi) of Rock Creek from its confluence with White Oak Creek (-84.69103, 36.65145) upstream to the low water crossing at rkm 25.6 (rmi 15.9) (-84.58888, 36.70800) in McCreary County, KY.

(ii) Map of Units FK5 and FK6 follows:

Unit FK5: Rock Creek, Fluted Kidneyshell Critical Habitat

Unit FK6: Little South Fork Cumberland River, Fluted Kidneyshell Critical Habitat



(11) Unit FK6: Little South Fork Cumberland River, McCreary and Wayne Counties, Kentucky.

(i) The unit includes 65.5 rkm (40.7 rmi) of the Little South Fork Cumberland River from its confluence with the Big South Fork Cumberland River (-84.58269, 36.82690), where it is the dividing line between Wayne and McCreary Counties, upstream to its confluence with Dobbs Creek (-84.85344, 36.62588) in Wayne County, KY.

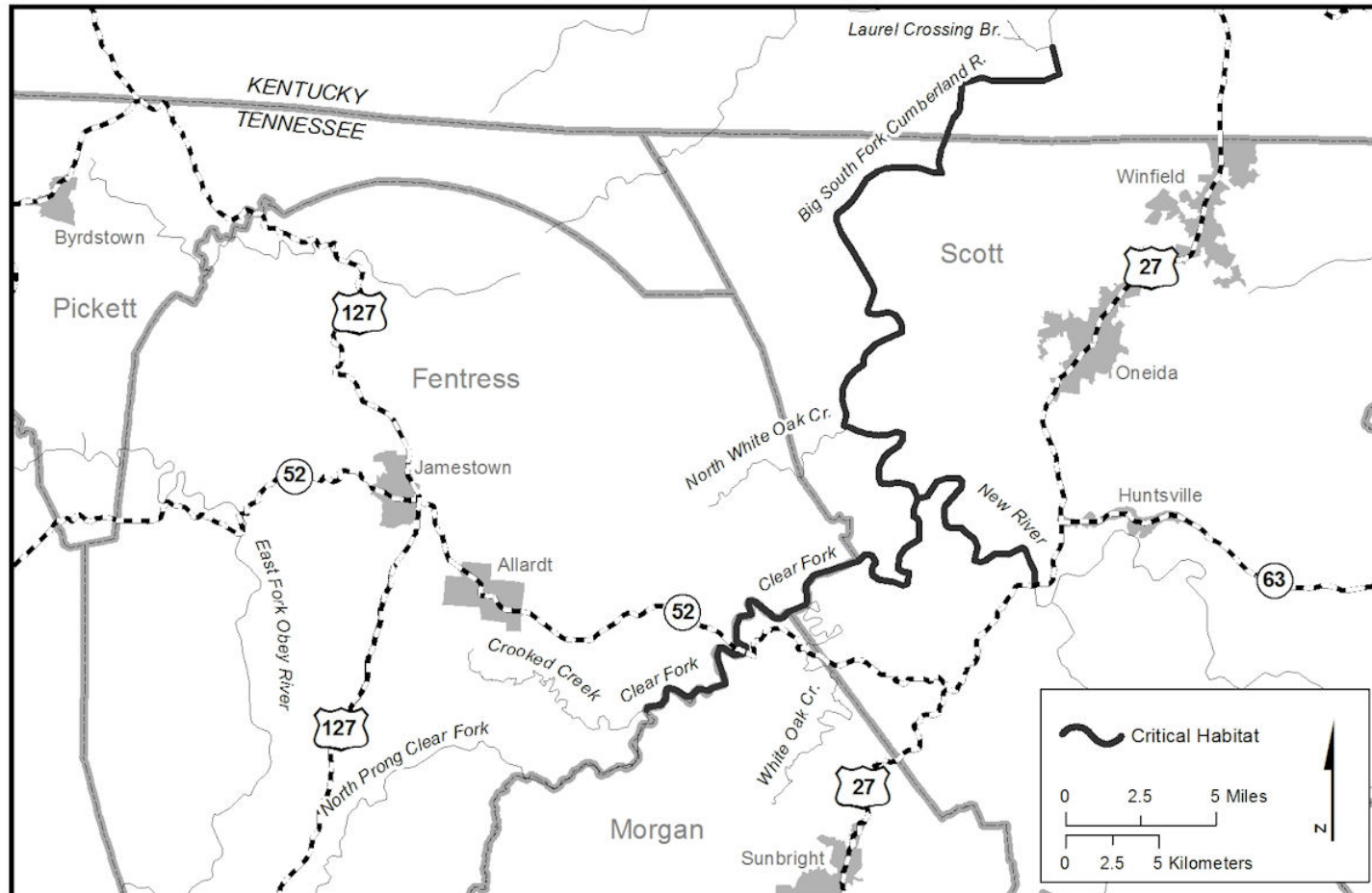
(ii) Map of Units FK5 and FK6 is provided at paragraph (10)(ii) of this entry.

(12) Unit FK7: Big South Fork Cumberland River, Fentress, Morgan, and Scott Counties, Tennessee, and McCreary County, Kentucky.

(i) The unit includes approximately 45 rkm (28 rmi) of the Big South Fork of the Cumberland River from its confluence with Laurel Crossing Branch downstream of Big Shoals (-84.53642, 36.64114), McCreary County, KY, upstream to its confluence with Clear Fork and New River (-84.62394, 36.42475), Scott County, TN. This unit also includes 32.3 rkm (20.0 rmi) of Clear Fork from its confluence with the Big South Fork and New River (-84.62394, 36.42475) in Scott County, TN, upstream to its confluence with Crooked Creek (-84.78637, 36.32533) along the Fentress and Morgan County line, TN. This unit also includes 14.7 rkm (9.1 rmi) of the New River from its confluence with the Big South Fork (-84.62394, 36.42475) upstream to the Highway 27 Bridge crossing (-84.55290, 36.38279) in Scott County, TN.

(ii) Map of Unit FK7 follows:

Unit FK7: Big South Fork Cumberland River, Fluted Kidneyshell Critical Habitat

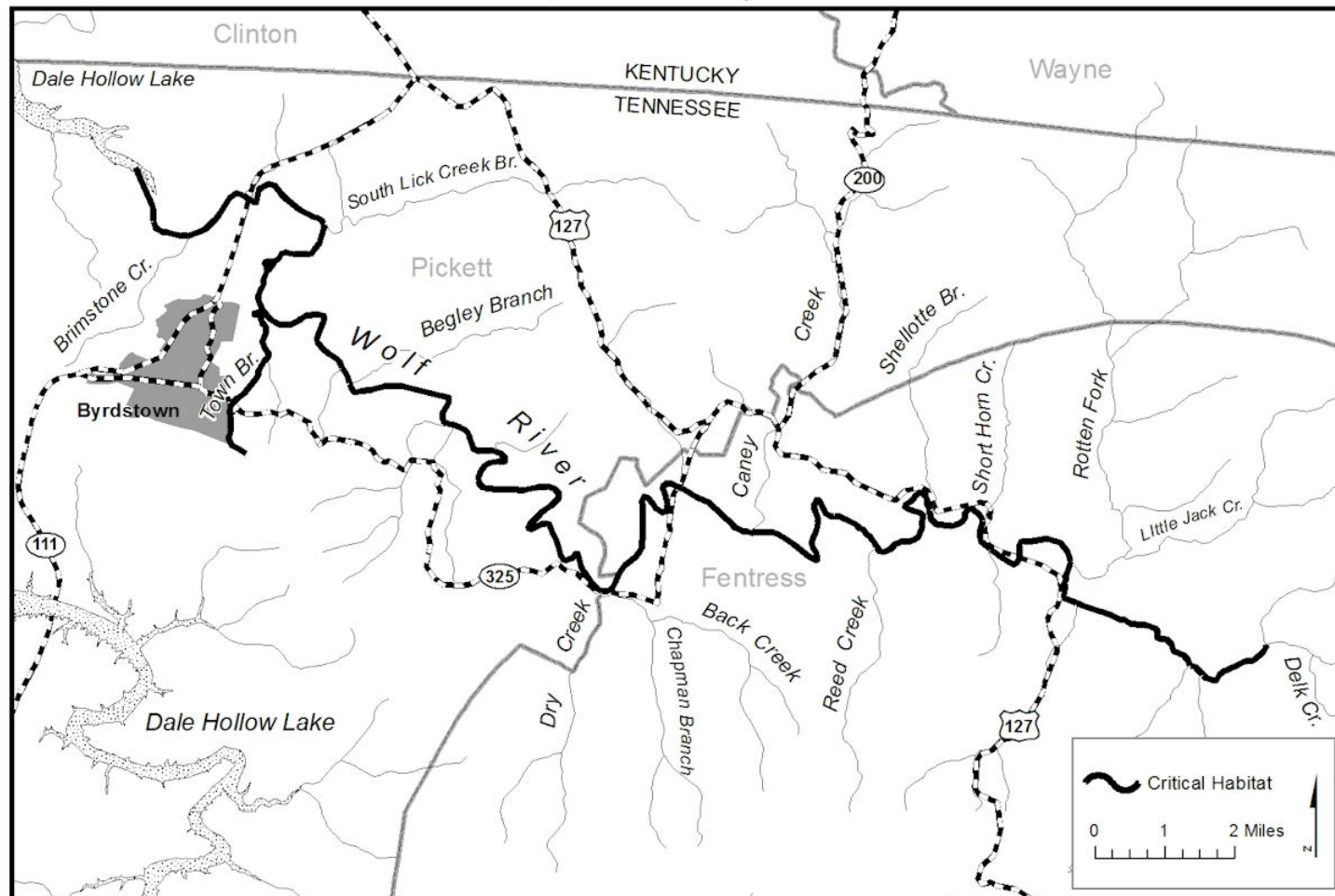


(13) Unit FK8: Wolf River and Town Branch, Pickett and Fentress Counties, Tennessee.

(i) The unit includes 41.0 rkm (25.5 rmi) of the Wolf River from its inundation at Dale Hollow Lake (-85.14414, 36.60670) in Pickett County, TN, upstream to its confluence with Delk Creek (-84.91064, 36.52784) in Fentress County, TN. This unit also includes 3.4 rkm (2.0 rmi) of Town Branch from its confluence with Wolf River (-85.11787, 36.58321) upstream to its headwaters (-85.12136, 36.55947) in Pickett County, TN.

(ii) Map of Unit FK8 follows:

Unit FK8: Wolf River and Town Branch, Fluted Kidneyshell Critical Habitat

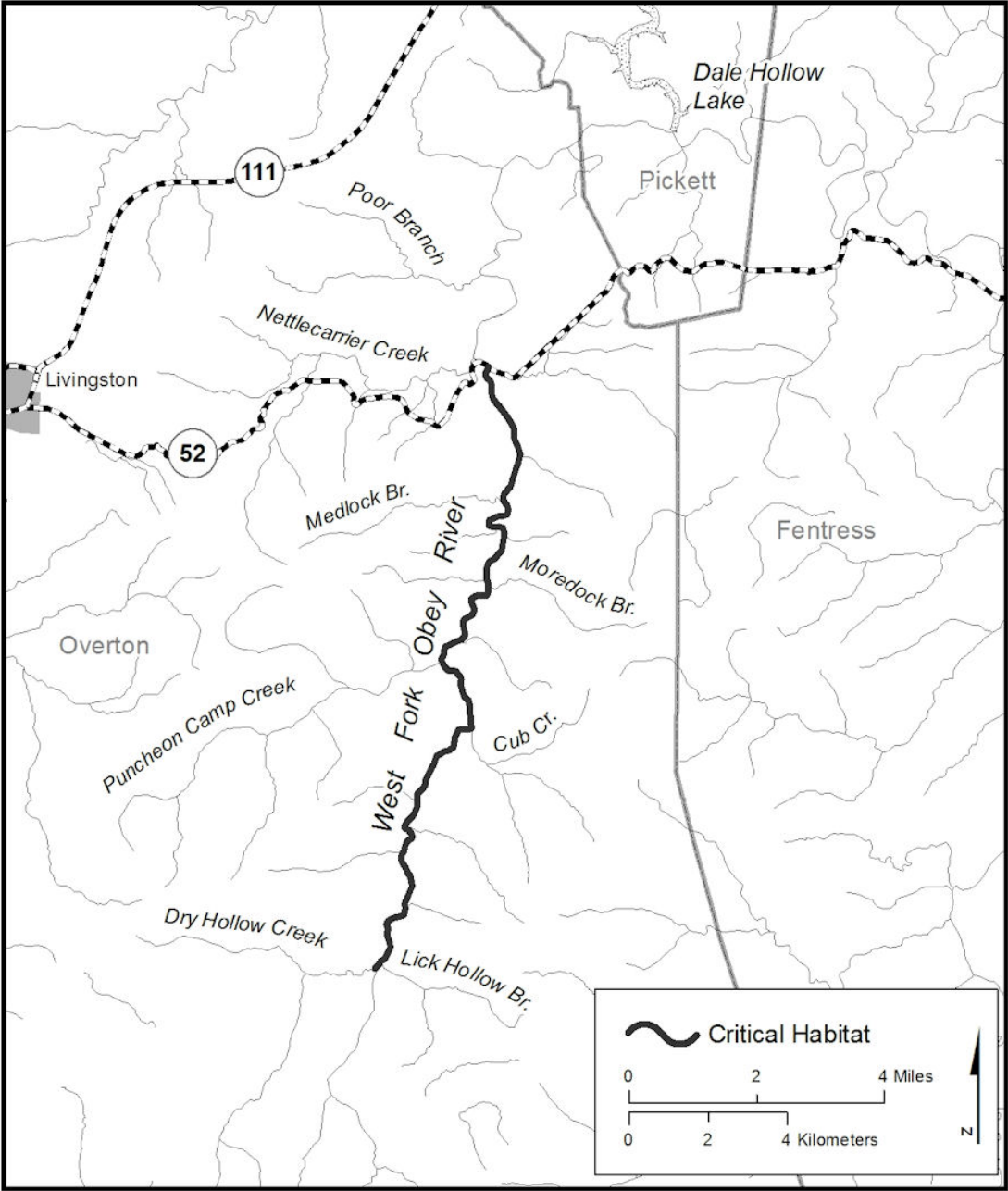


(14) Unit FK9: West Fork Obey River, Overton County, Tennessee.

(i) The unit includes approximately 19 rkm (12 rmi) of the West Fork Obey River from the Highway 52 Bridge crossing (-85.17410, 36.39731) upstream to its confluence with Dry Hollow Creek (-85.20747, 36.25989) in Overton County, TN.

(ii) Map of Unit FK9 follows:

Unit FK9: West Fork Obey River, Fluted Kidneyshell Critical Habitat

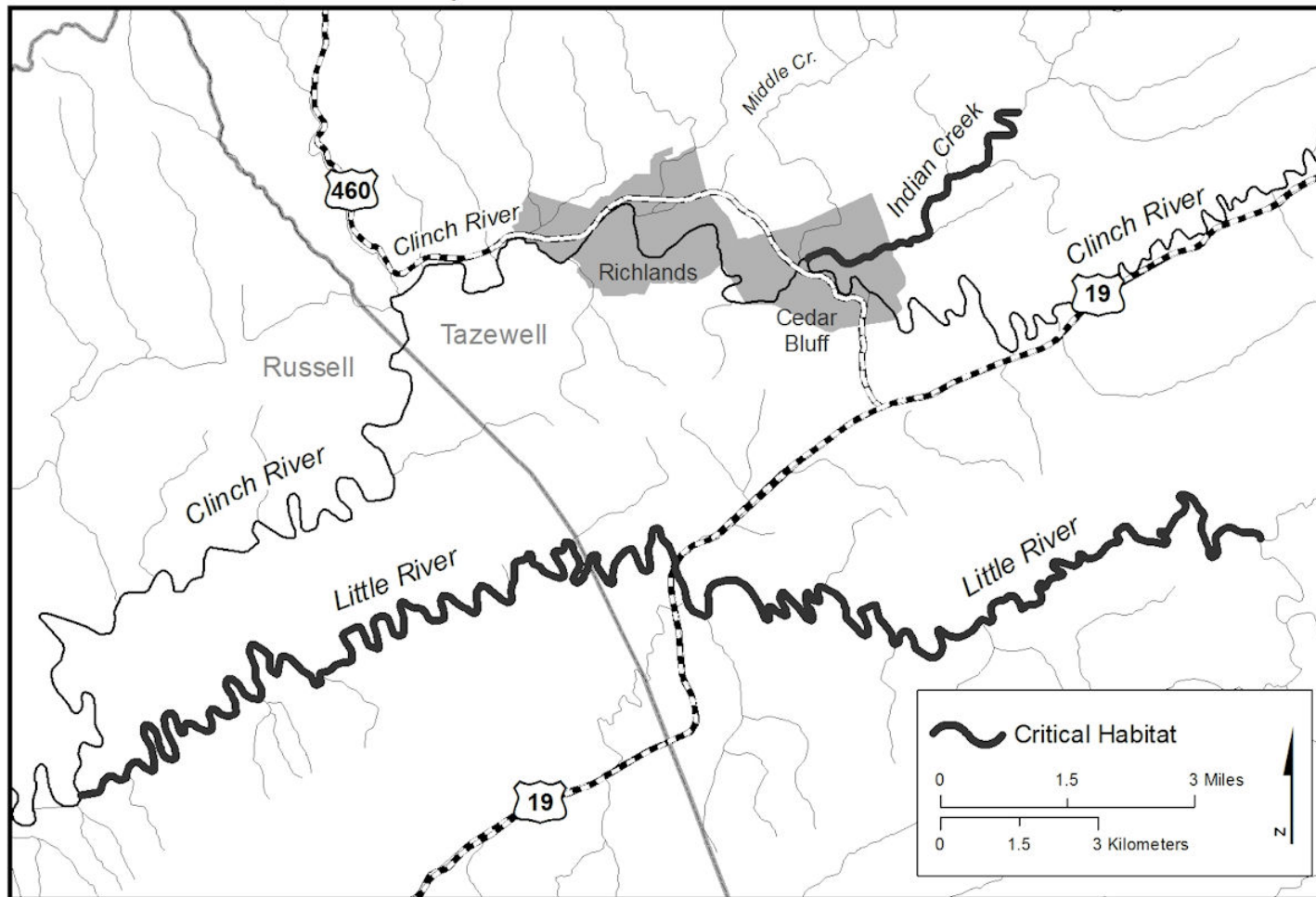


(15) Unit FK10: Indian Creek, Tazewell County, Virginia.

(i) The unit includes 6.7 rkm (4.2 rmi) of Indian Creek from its confluence with the Clinch River (-81.76608, 37.08893) upstream to the fourth Norfolk Southern Railroad crossing at Van Dyke (-81.71975, 37.11206) in Tazewell County, VA.

(ii) Map of Units FK10 and FK11 follows:

Unit FK10: Indian Creek, Fluted Kidneyshell Critical Habitat
Unit FK11: Little River, Fluted Kidneyshell Critical Habitat



(16) Unit FK11: Little River, Russell and Tazewell Counties, Virginia.

(i) The unit includes approximately 50 rkm (31 rmi) of Little River from its confluence with the Clinch River (-81.92582, 37.00223) in Russell County, VA, upstream to its confluence with Liberty and Maiden Spring Creeks (-81.67240, 37.03760) in Tazewell County, VA.

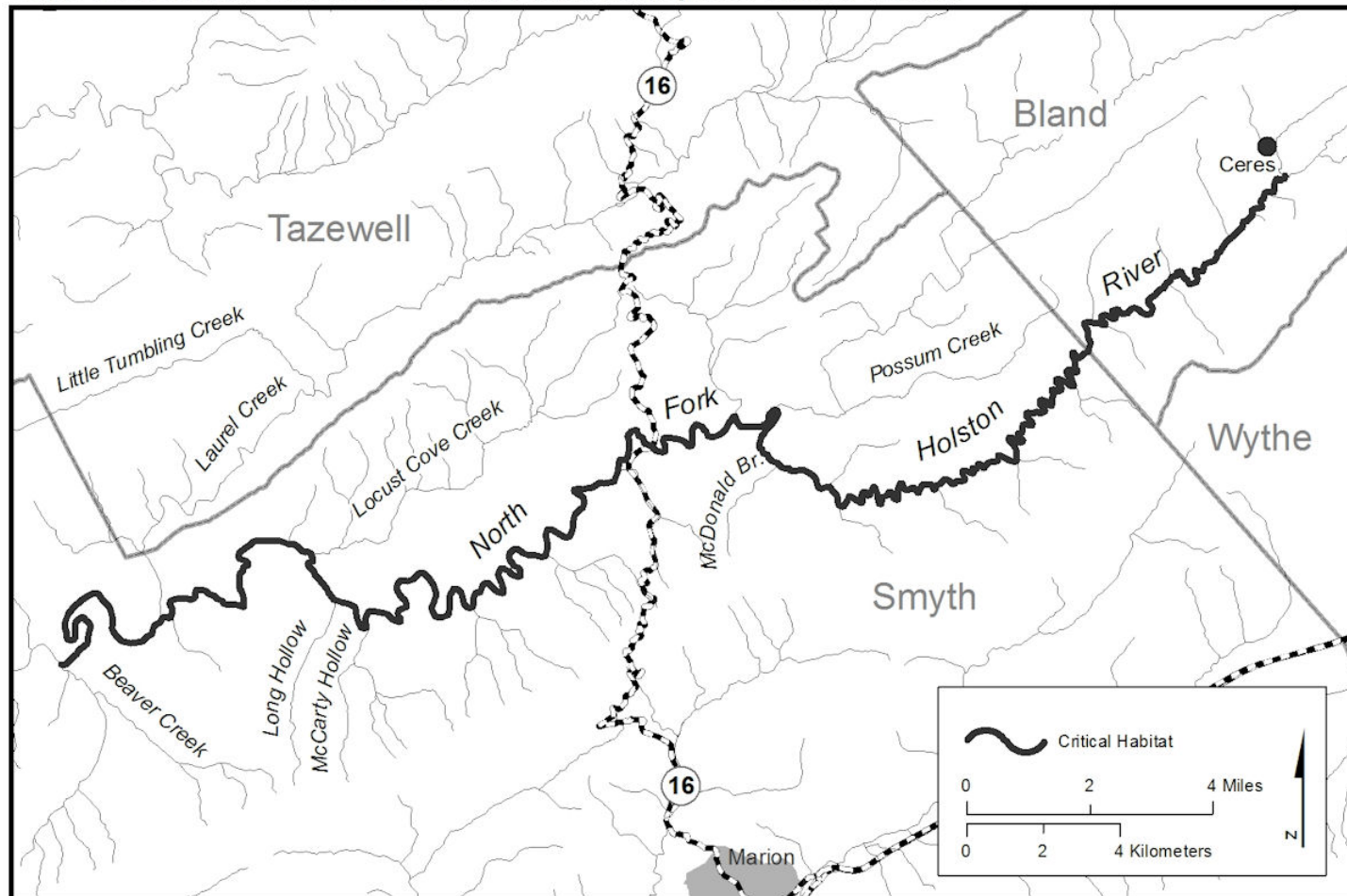
(ii) Map of Units FK10 and FK11 is provided at paragraph (15)(ii) of this entry.

(17) Unit FK12: North Fork Holston River, Smyth and Bland Counties, Virginia.

(i) The unit includes approximately 67 rkm (42 rmi) of the North Fork Holston River from its confluence with Beaver Creek (-81.70277, 36.90825), upstream of Saltville, in Smyth County, VA, upstream to Ceres (-81.33775, 37.01035), Bland County, VA.

(ii) Map of Unit FK12 follows:

Unit FK12: North Fork Holston River, Fluted Kidneyshell Critical Habitat

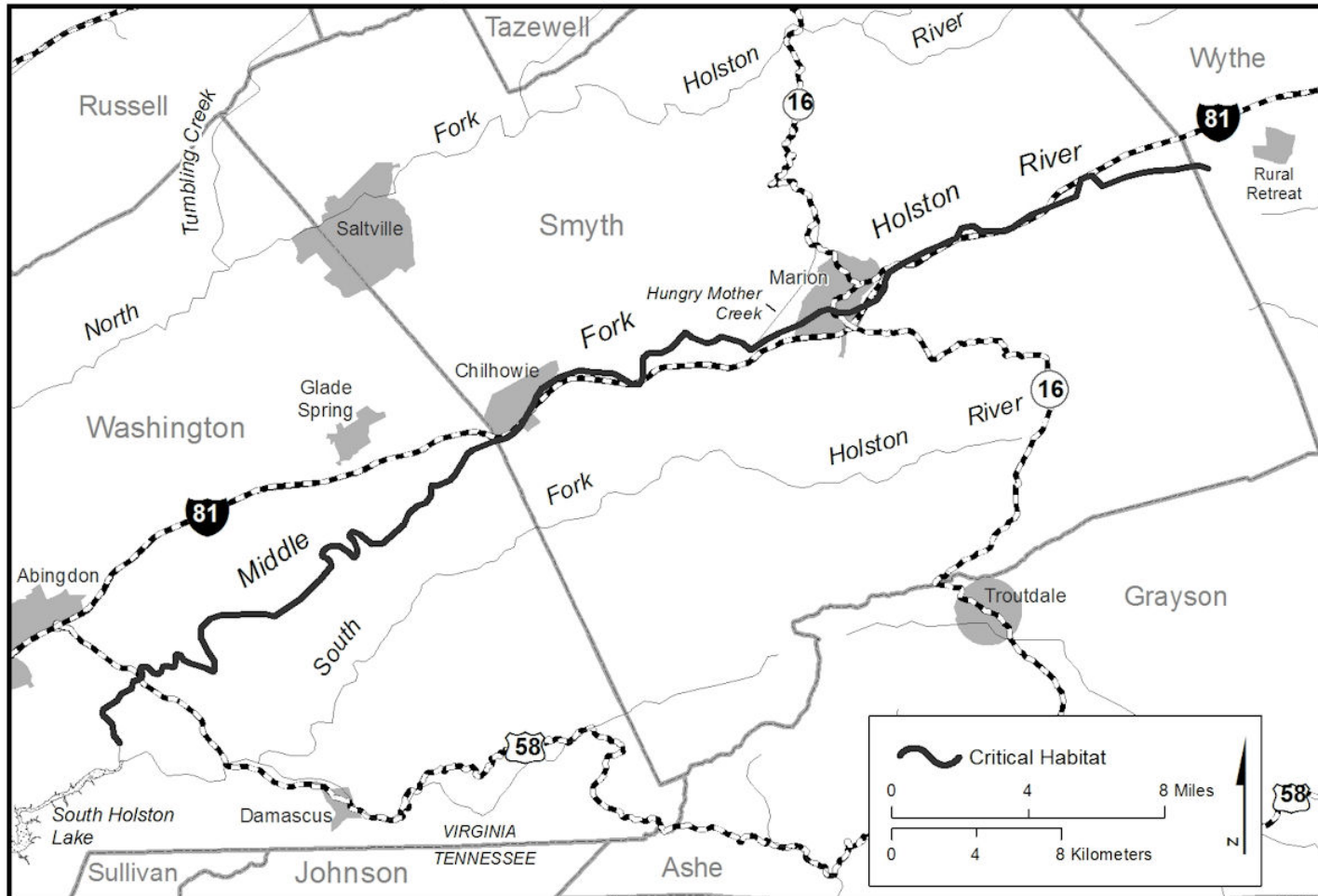


(18) Unit FK13: Middle Fork Holston River, Washington, Smyth, and Wythe Counties, Virginia.

(i) The unit includes approximately 89 rkm (55 rmi) of the Middle Fork Holston River from its inundation at South Holston Lake (-81.90427, 36.66338) in Washington County, VA, upstream to its headwaters (-81.31345, 36.88666) in Wythe County, VA.

(ii) Map of Unit FK13 follows:

Unit FK13: Middle Fork Holston River, Fluted Kidneyshell Critical Habitat

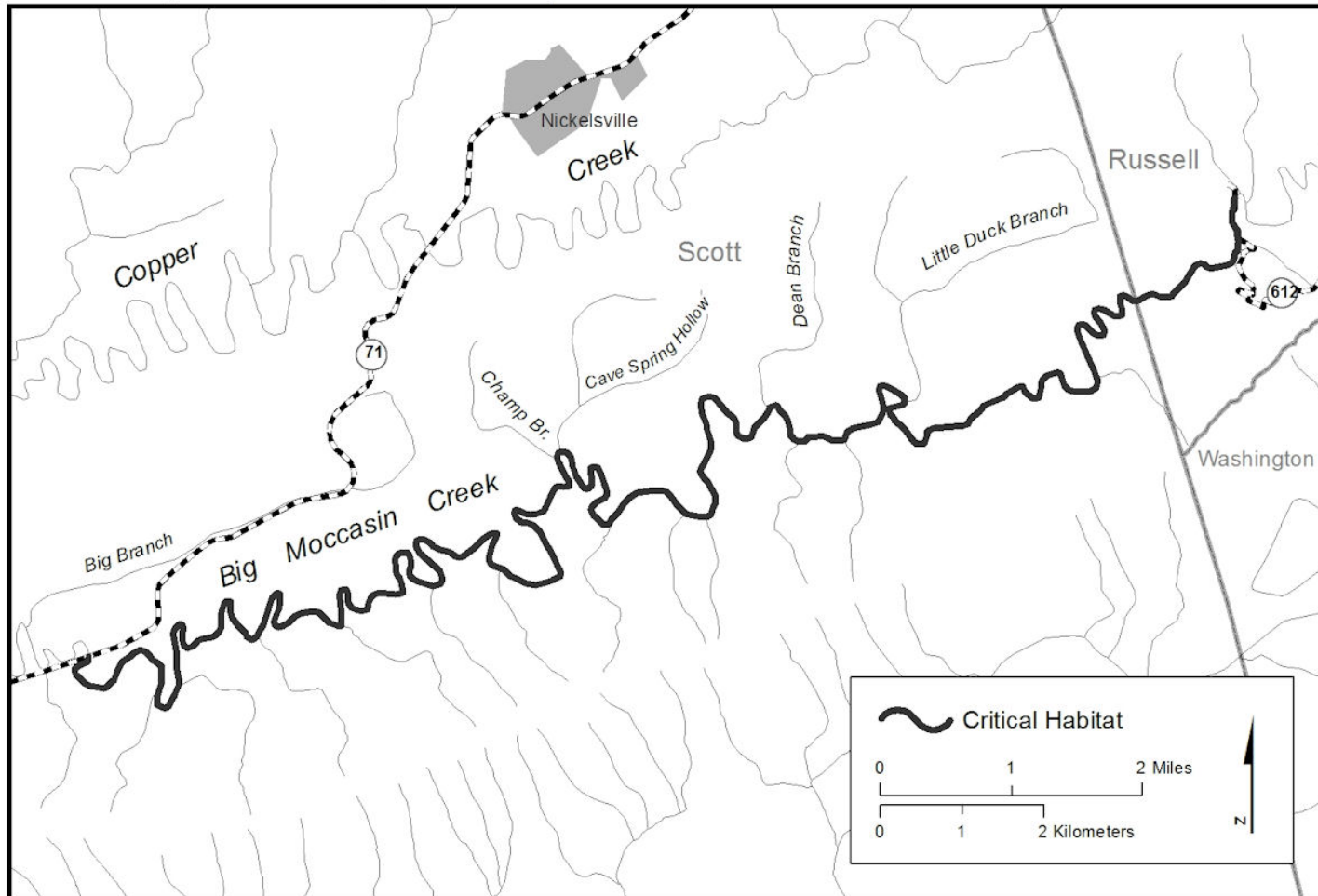


(19) Unit FK14: Big Moccasin Creek, Scott and Russell Counties, Virginia.

(i) The unit includes approximately 33 rkm (21 rmi) of Big Moccasin Creek from the Highway 71 Bridge crossing (-82.48361, 36.69109) in Scott County, VA, upstream to the Route 612 Bridge crossing (-82.32348, 36.73740) near Collinwood in Russell County, VA.

(ii) Map of Unit FK14 follows:

Unit FK14: Big Moccasin Creek, Fluted Kidneyshell Critical Habitat

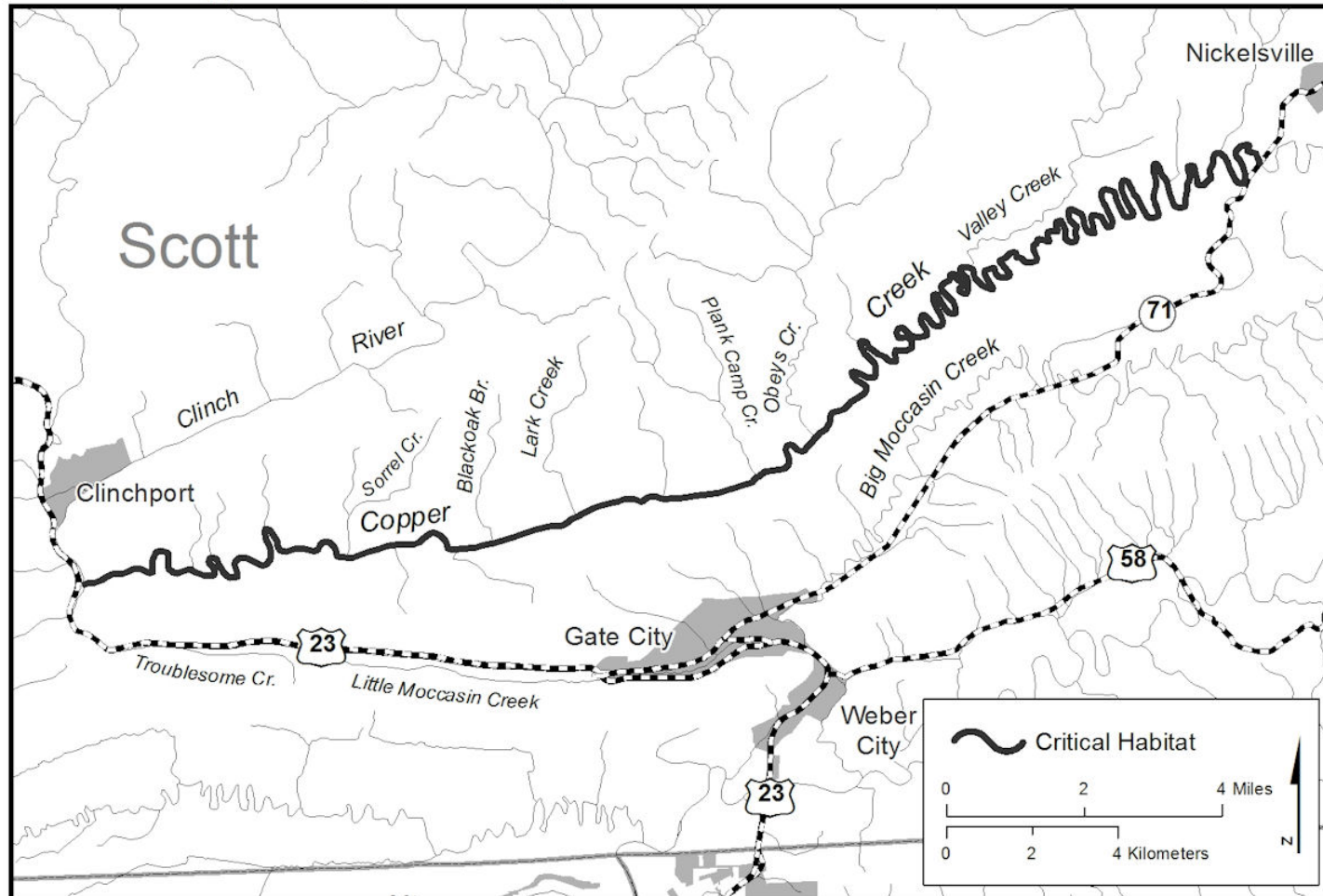


(20) Unit FK15: Copper Creek, Scott County, Virginia.

(i) The unit includes 55.5 rkm (34.5 rmi) of Copper Creek from its confluence with the Clinch River (-82.74538, 36.65544) upstream to the Highway 71 Bridge crossing (-82.43514, 36.73473) in Scott County, VA.

(ii) Map of Unit FK15 follows:

Unit FK15: Copper Creek, Fluted Kidneyshell Critical Habitat

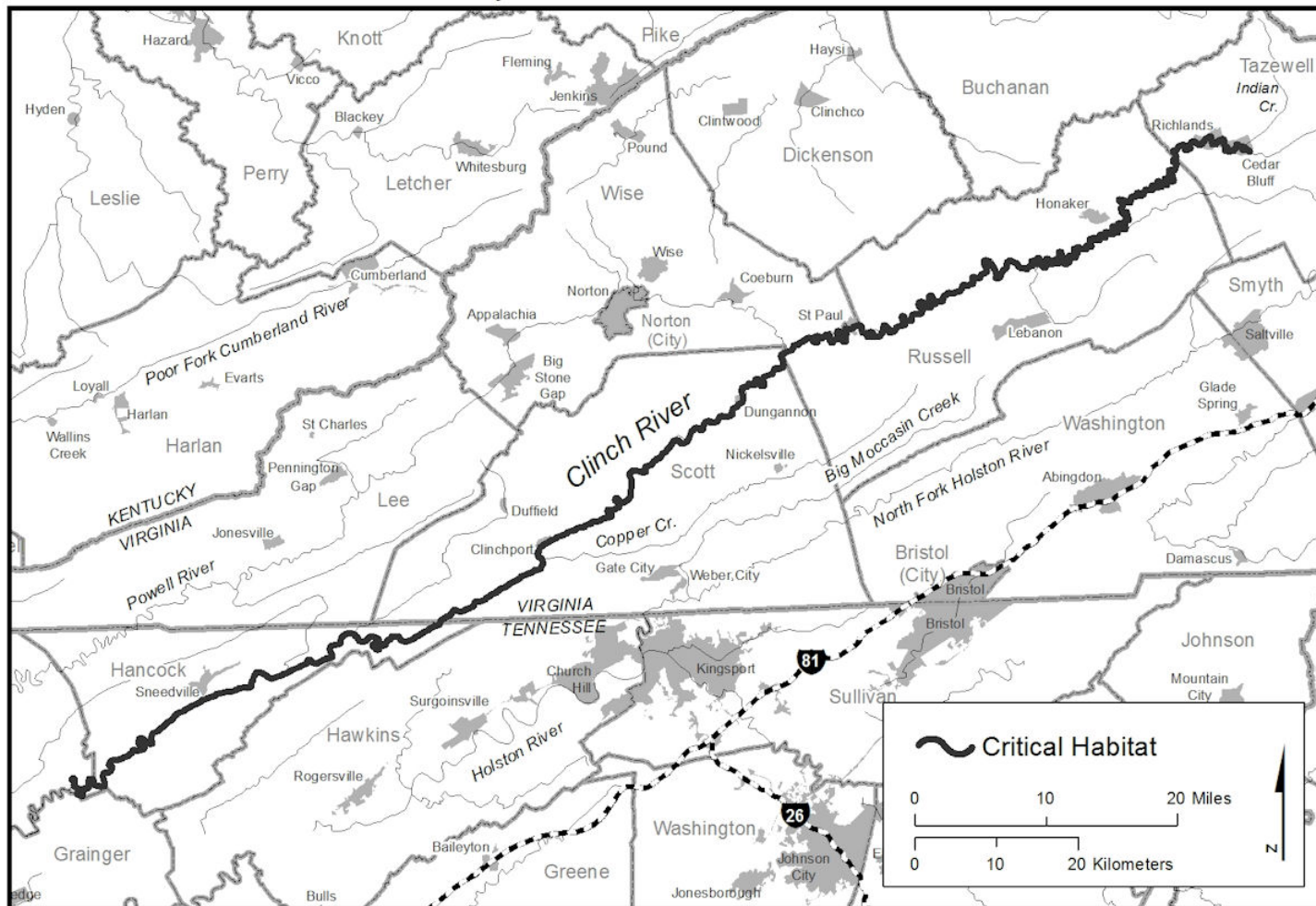


(21) Unit FK16: Clinch River, Hancock County, Tennessee, and Scott, Russell, and Tazewell Counties, Virginia.

(i) The unit includes approximately 263 rkm (163 rmi) of the Clinch River from rkm 255 (rmi 159) immediately below Grissom Island (-83.40106, 36.43081) in Hancock County, TN, upstream to its confluence with Indian Creek near Cedar Bluff (-81.74999, 37.07995), Tazewell County, VA.

(ii) Map of Unit FK16 follows:

Unit FK16: Clinch River, Fluted Kidneyshell Critical Habitat

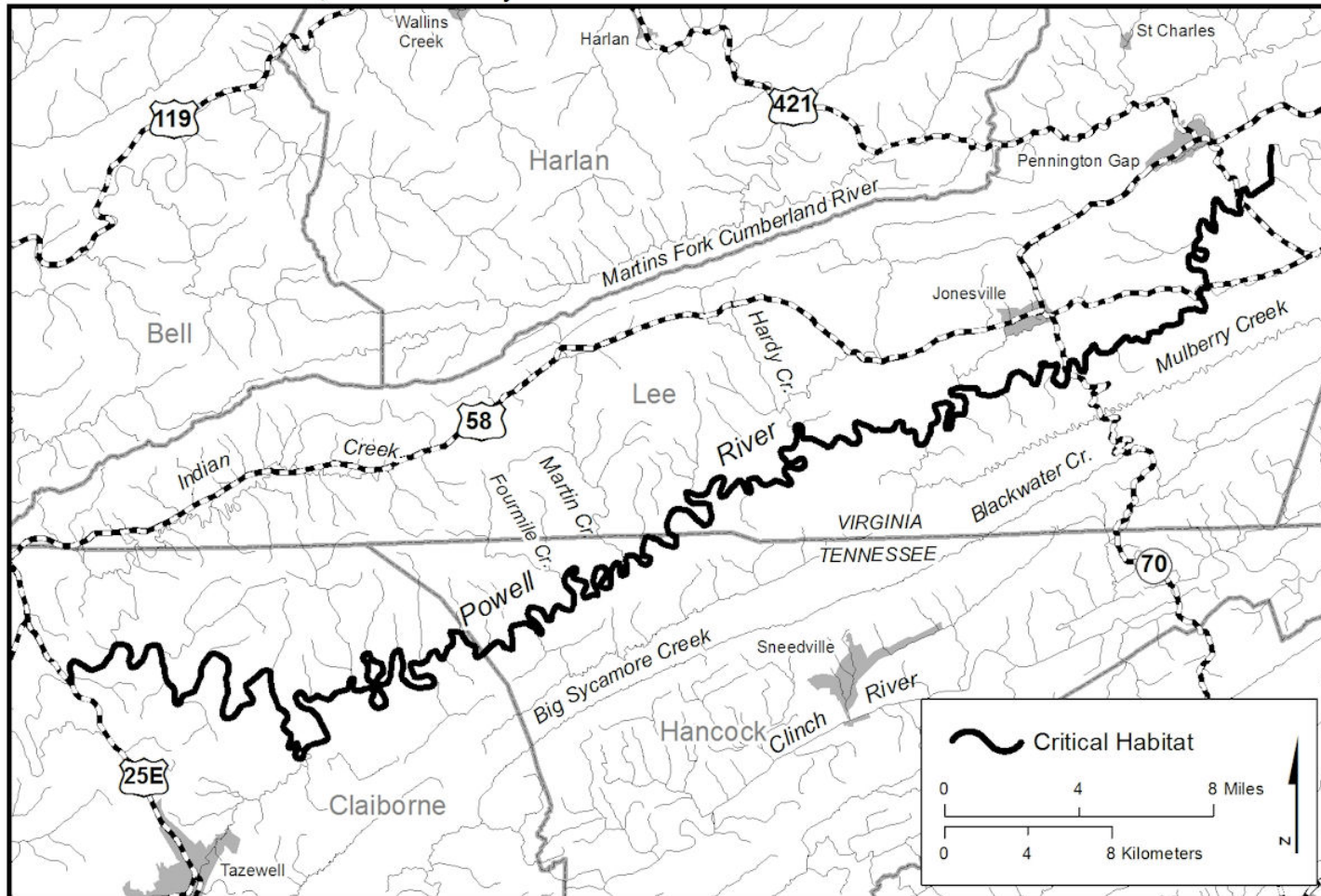


(22) Unit FK17: Powell River, Claiborne and Hancock Counties, Tennessee, and Lee County, Virginia.

(i) The unit includes approximately 153 rkm (95 rmi) of the Powell River from the U.S. 25E Bridge (-83.63102, 36.54143) in Claiborne County, TN, upstream to rkm 256 (rmi 159) (-82.98111, 36.75730, upstream of Rock Island in the vicinity of Pughs) in Lee County, VA.

(ii) Map of Unit FK17 follows:

Unit FK17: Powell River, Fluted Kidneyshell Critical Habitat

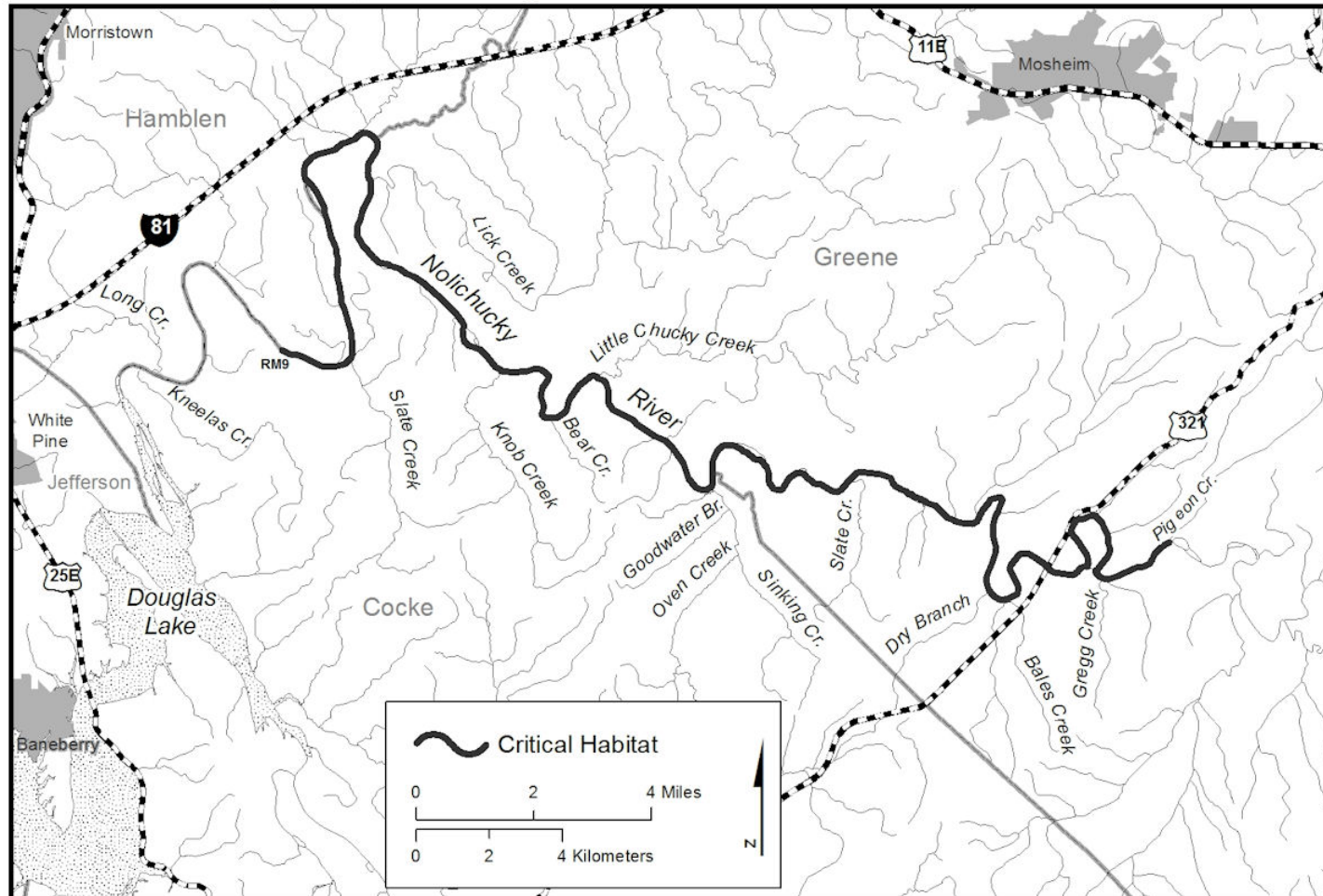


(23) Unit FK18: Nolichucky River, Cocke, Hamblen, and Greene Counties, Tennessee.

(i) The unit includes approximately 52 rkm (32 rmi) of the Nolichucky River from rkm 14 (rmi 9), approximately 0.6 rkm (0.4 rmi) upstream of Enka Dam (-83.19630, 36.12970), where it divides Hamblen and Cocke Counties, TN, upstream to its confluence with Pigeon Creek, just upstream of the Highway 321 Bridge crossing (-82.92926, 36.07545), in Greene County, TN.

(ii) Map of Unit FK18 follows:

Unit FK18: Nolichucky River, Fluted Kidneyshell Critical Habitat



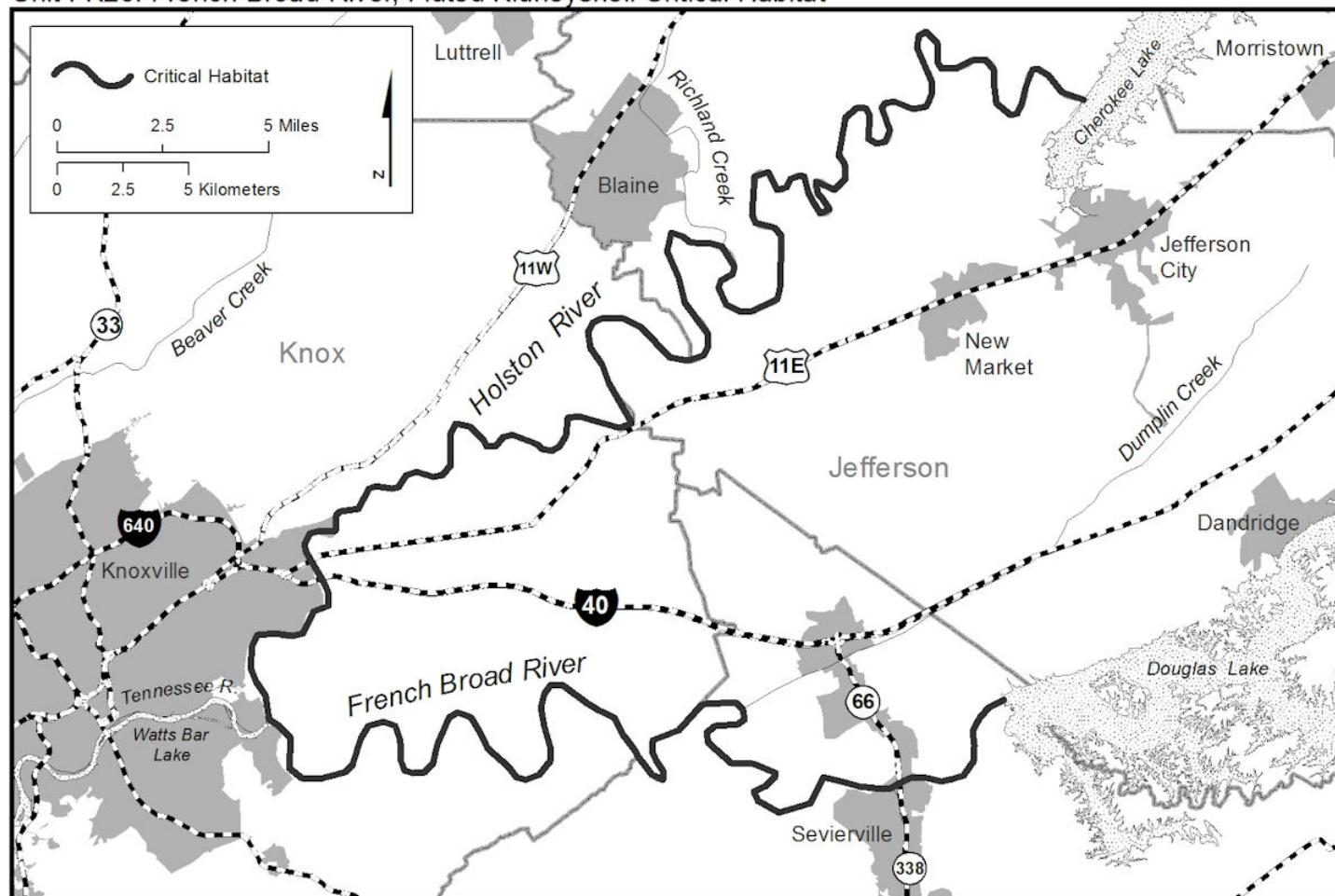
(24) Unit FK19: Holston River, Knox, Grainger, and Jefferson Counties, Tennessee.

(i) The unit includes approximately 85 rkm (53 rmi) of the Holston River from its confluence with the French Broad River (-83.84967, 35.95903) in Knox County, TN, upstream to the base of Cherokee Dam at rkm 83.7 (rmi 52.3) (-83.49855, 36.16666) along the Grainger and Jefferson County, TN, line.

(ii) Map of Units FK19 and FK20 follows:

Unit FK19: Holston River, Fluted Kidneyshell Critical Habitat

Unit FK20: French Broad River, Fluted Kidneyshell Critical Habitat



(25) Unit FK20: French Broad River, Knox and Sevier Counties, Tennessee.

(i) The unit includes approximately 56 rkm (35 rmi) of the French Broad River from its confluence with the Holston River (-83.84967, 35.95903) in Knox County, TN, upstream to the base of Douglas Dam at rkm 51.7 (rmi 32.3) (-83.53821, 35.96073) in Sevier County, TN.

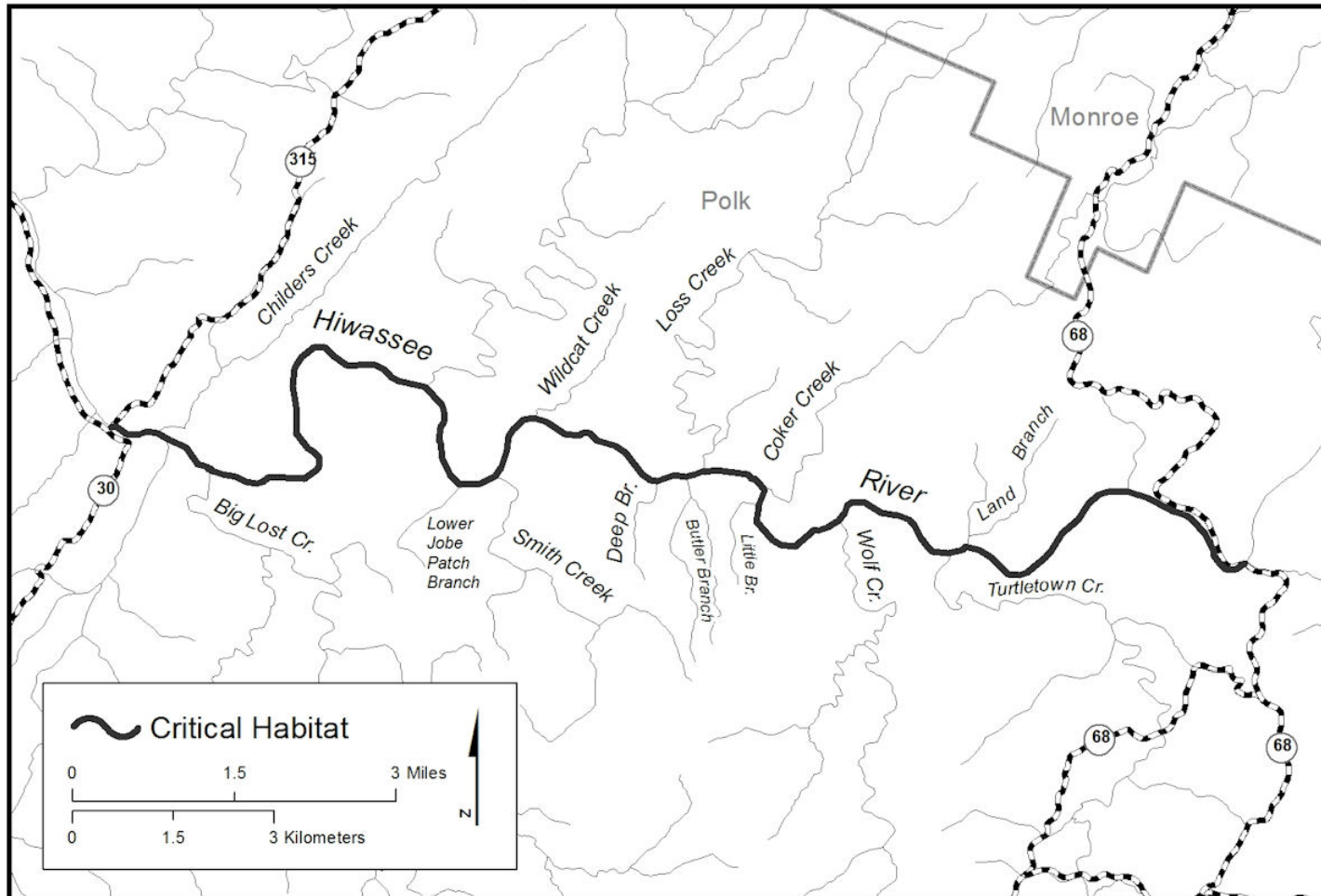
(ii) Map of Units FK19 and FK20 is provided at paragraph (24)(ii) of this entry.

(26) Unit FK21: Hiwassee River, Polk County, Tennessee.

(i) The unit includes approximately 24 rkm (15 rmi) of the Hiwassee River from the Highway 315 Bridge crossing (-84.50234, 35.18875) upstream to the Highway 68 Bridge crossing (-84.31728, 35.16811) in Polk County, TN.

(ii) Map of Unit FK21 follows:

Unit FK21: Hiwassee River, Fluted Kidneyshell Critical Habitat

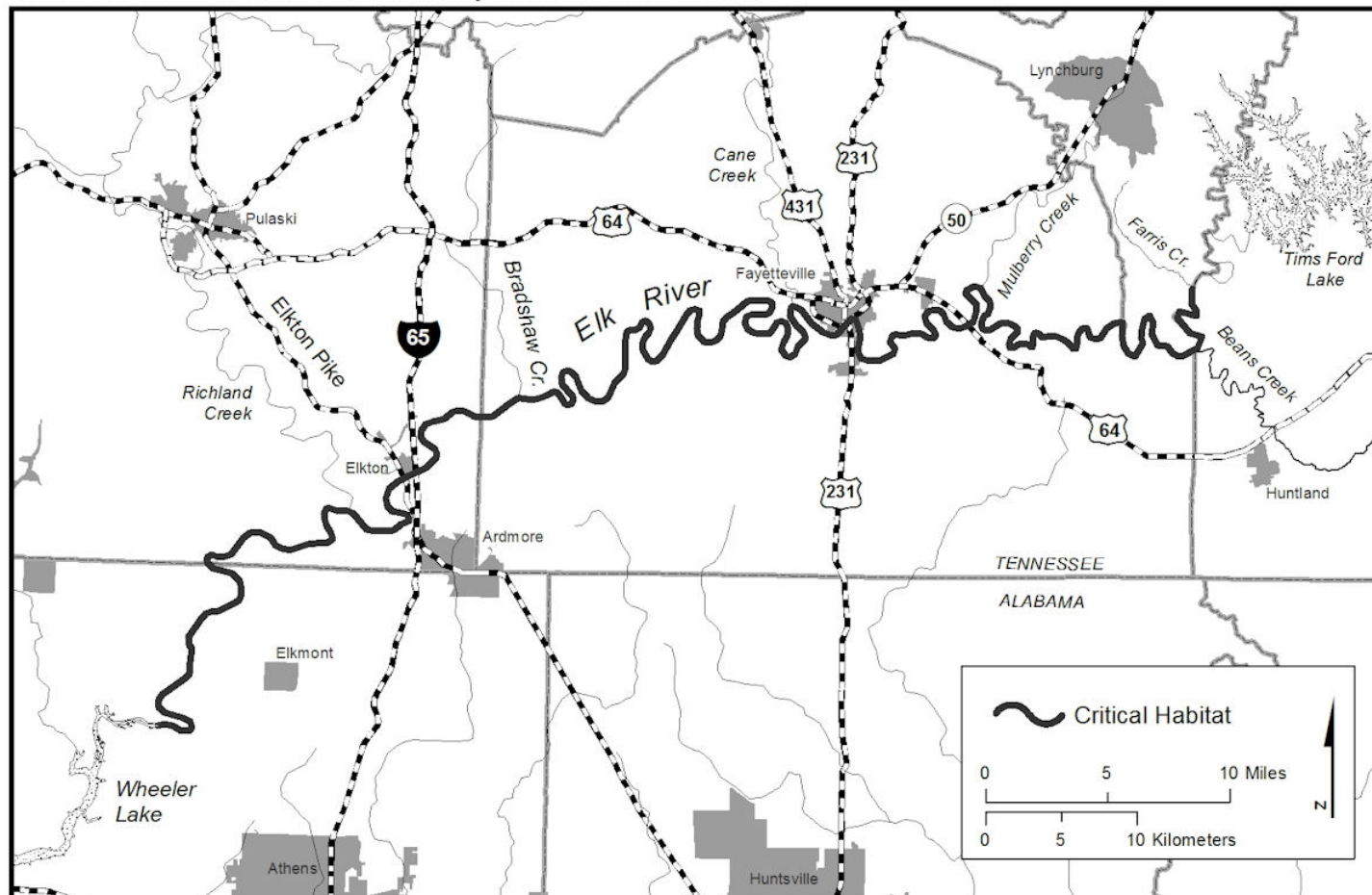


(27) Unit FK22: Elk River, Limestone County, Alabama, and Giles, Lincoln, Franklin, and Moore Counties, Tennessee.

(i) The unit includes approximately 164 rkm (102 rmi) of the Elk River from its inundation at Wheeler Lake (-87.06503, 34.89788) in Limestone County, AL, upstream to its confluence with Farris Creek (-86.31996, 35.16288) at the dividing line between Franklin and Moore Counties, TN.

(ii) Map of Unit FK22 follows:

Unit FK22: Elk River, Fluted Kidneyshell Critical Habitat

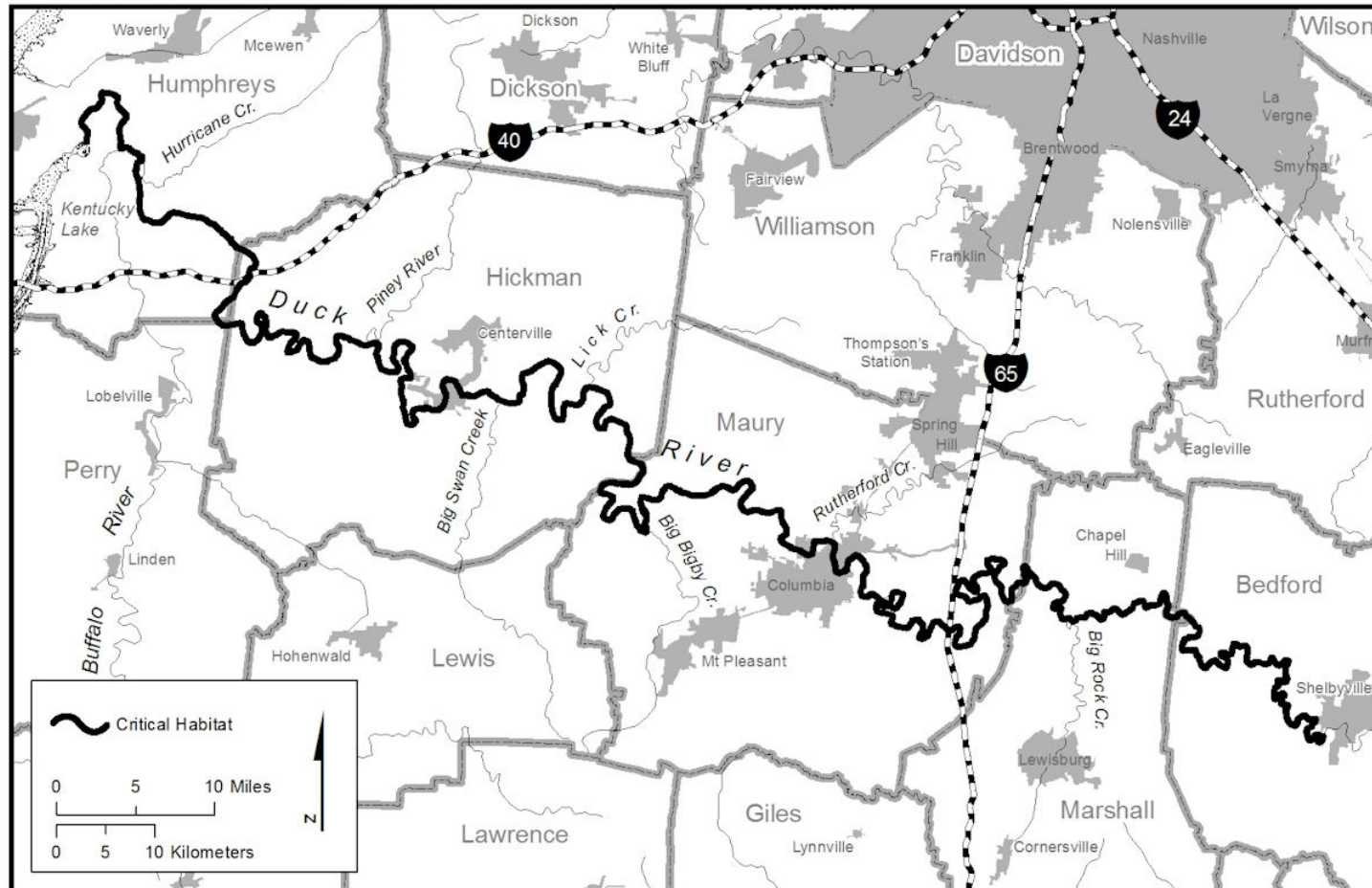


(28) Unit FK23: Duck River, Humphreys, Perry, Hickman, Maury, Marshall, and Bedford Counties, Tennessee.

(i) The unit includes approximately 348 rkm (216 rmi) of the Duck River from its inundation at Kentucky Lake (-87.88011, 36.00244) in Humphreys County, TN, upstream to its confluence with Flat Creek (-86.48778, 35.47209) near Shelbyville in Bedford County, TN.

(ii) Map of Unit FK23 follows:

Unit FK23: Duck River, Fluted Kidneyshell Critical Habitat

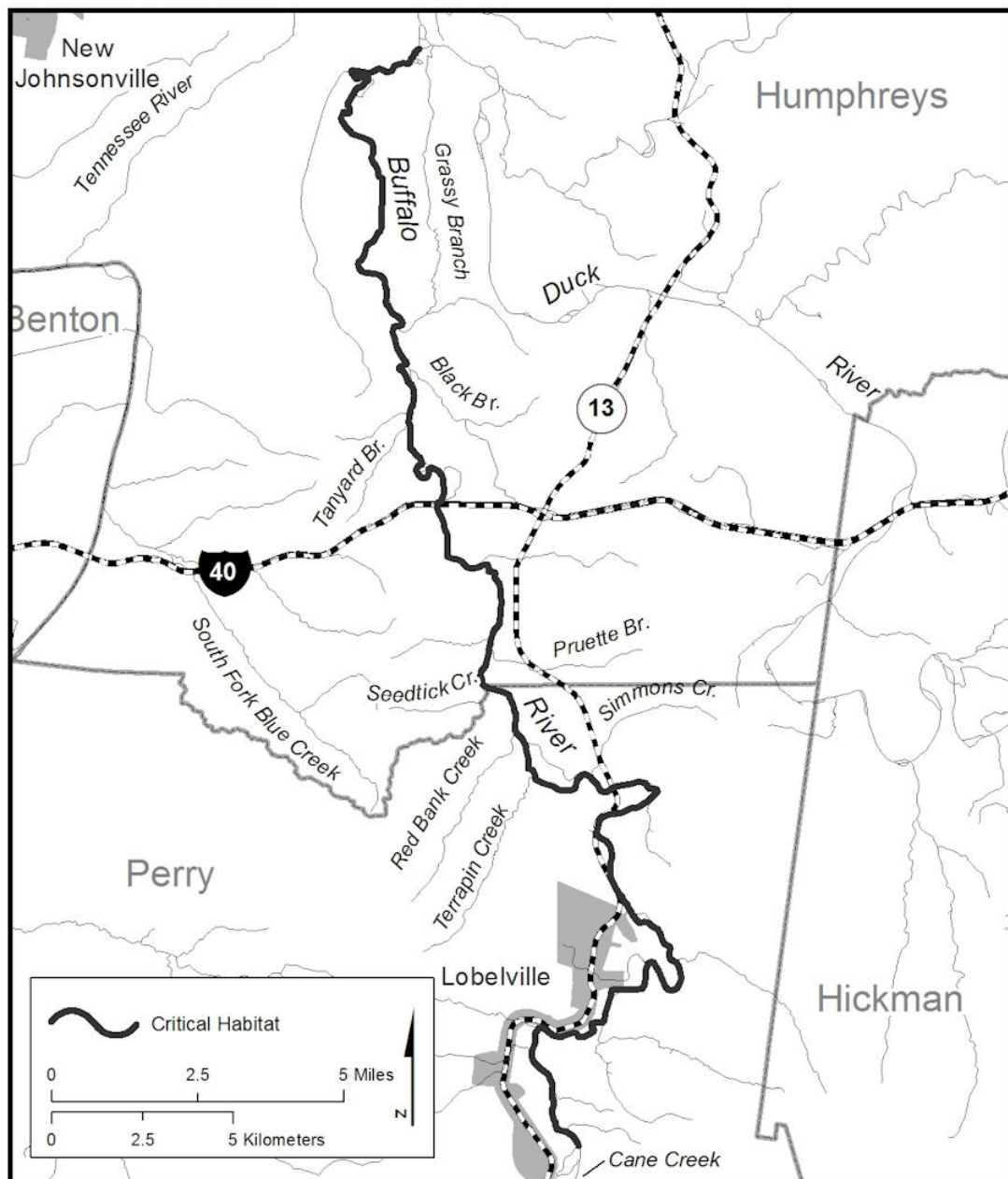


(29) Unit FK24: Buffalo River, Humphreys and Perry Counties, Tennessee.

(i) The unit includes 50 rkm (31 rmi) of the Buffalo River from its confluence with the Duck River (-87.84261, 35.99477) in Humphreys County, TN, upstream to its confluence with Cane Creek (-87.78718, 35.72298) in Perry County, TN.

(ii) Map of Unit FK24 follows:

Unit FK24: Buffalo River, Fluted Kidneyshell
Critical Habitat



Slabside Pearlymussel (*Pleuronaia dolabelloides*)

(1) Critical habitat units are depicted on the maps below for Colbert, Jackson, Limestone, Madison, and Marshall Counties, Alabama; Tishomingo County, Mississippi; Bedford, Bledsoe, Claiborne, Cocke, Franklin, Giles, Greene, Hamblen, Hancock, Hickman, Humphreys, Lincoln, Marion, Marshall, Maury, Moore, Perry, Polk, and Sequatchie Counties, Tennessee; and Bland, Lee, Russell, Scott, Smyth, Tazewell, Washington, and Wythe Counties, Virginia.

(2) Within these areas, the primary constituent elements of the physical or biological features essential to the conservation of slabside pearlymussel consist of five components:

(i) Riffle habitats within large, geomorphically stable stream channels (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation).

(ii) Stable substrates of sand, gravel, and cobble with low to moderate amounts of fine sediment and containing flow refugia with low shear stress.

(iii) A natural hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found, and connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability for all life stages, and spawning habitat for native fishes.

(iv) Water quality with low levels of pollutants and including a natural temperature regime, pH (between 6.0 to 8.5), oxygen content (not less than 5.0 milligrams/liter), hardness, and turbidity necessary for normal behavior, growth, and viability of all life stages.

(v) The presence of abundant fish hosts, which may include the popeye shiner, rosyface shiner, saffron shiner, silver shiner, telescope shiner, Tennessee shiner, whitetail shiner, white shiner, and eastern blacknose dace, necessary for recruitment of the slabside pearlymussel.

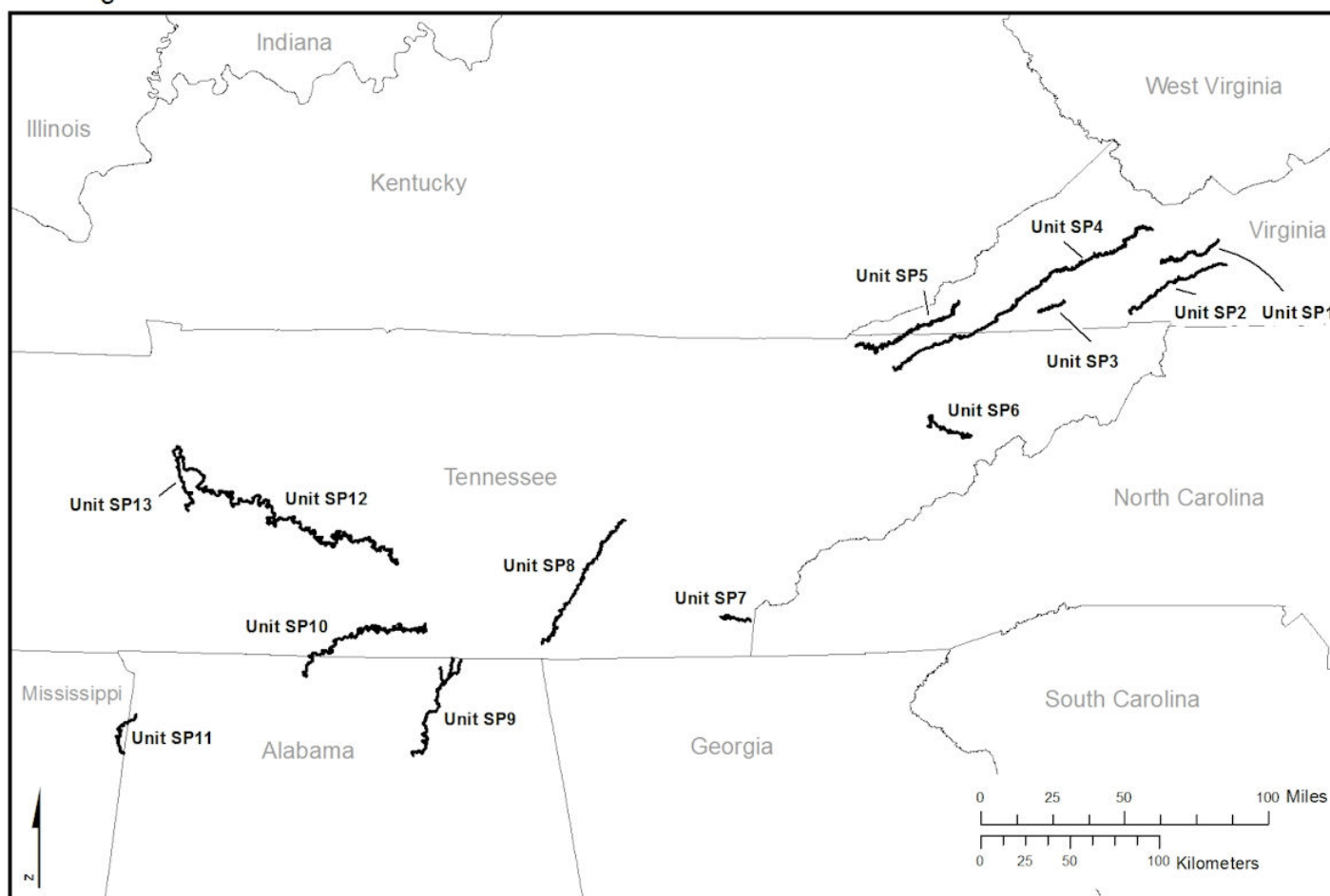
(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, dams, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

(4) *Critical habitat map units.* Data layers defining map units were created with USGS National Hydrography Dataset (NHD⁺) GIS data. The 1:100,000 river reach (route) files were used to calculate river kilometers and miles. ESRI's ArcGIS 10.0 software was used to determine longitude and latitude coordinates using decimal degrees. The projection used in mapping all units was USA Contiguous Albers Equal Area Conic USGS version, NAD 83, meters. The following data sources were referenced to identify features (like roads and streams) used to delineate the upstream and downstream extents of critical habitat units: NHD⁺ flowline and waterbody data, 2011 Navteq roads data, USA Topo ESRI online basemap service, DeLorme Atlas and Gazetteers, and USGS 7.5

minute topographic maps. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the field office internet site (<http://www.fws.gov/cookeville>), at <http://www.regulations.gov> at Docket No. FWS–R4–ES–2013–0026, and at the Service’s Tennessee Fish and Wildlife Office. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) An overview of critical habitat locations for the slabside pearlymussel in Mississippi, Alabama, Tennessee, and Virginia follows:

Overview of Critical Habitat Locations for the Slabside Pearlymussel in Mississippi, Alabama, Tennessee, and Virginia

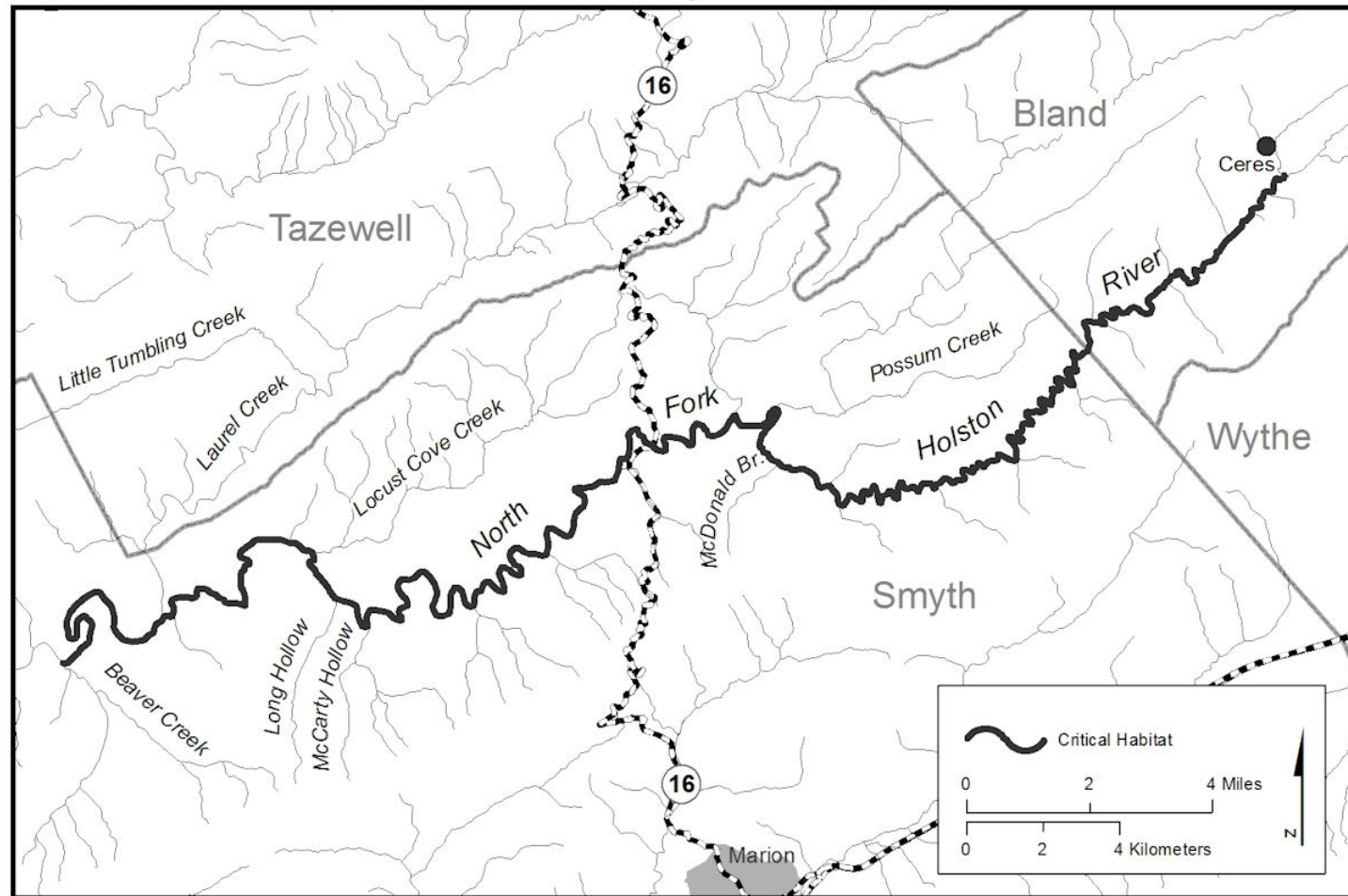


(6) Unit SP1: North Fork Holston River, Smyth and Bland Counties, Virginia.

(i) The unit includes approximately 67 river kilometers (rkm) (42 river miles (rmi)) of the North Fork Holston River from its confluence with Beaver Creek (-81.70277, 36.90825), upstream of Saltville, in Smyth County, VA, upstream to Ceres (-81.33775, 37.01035), Bland County, VA.

(ii) Map of Unit SP1 follows:

Unit SP1: North Fork Holston River, Slabside Pearlymussel Critical Habitat

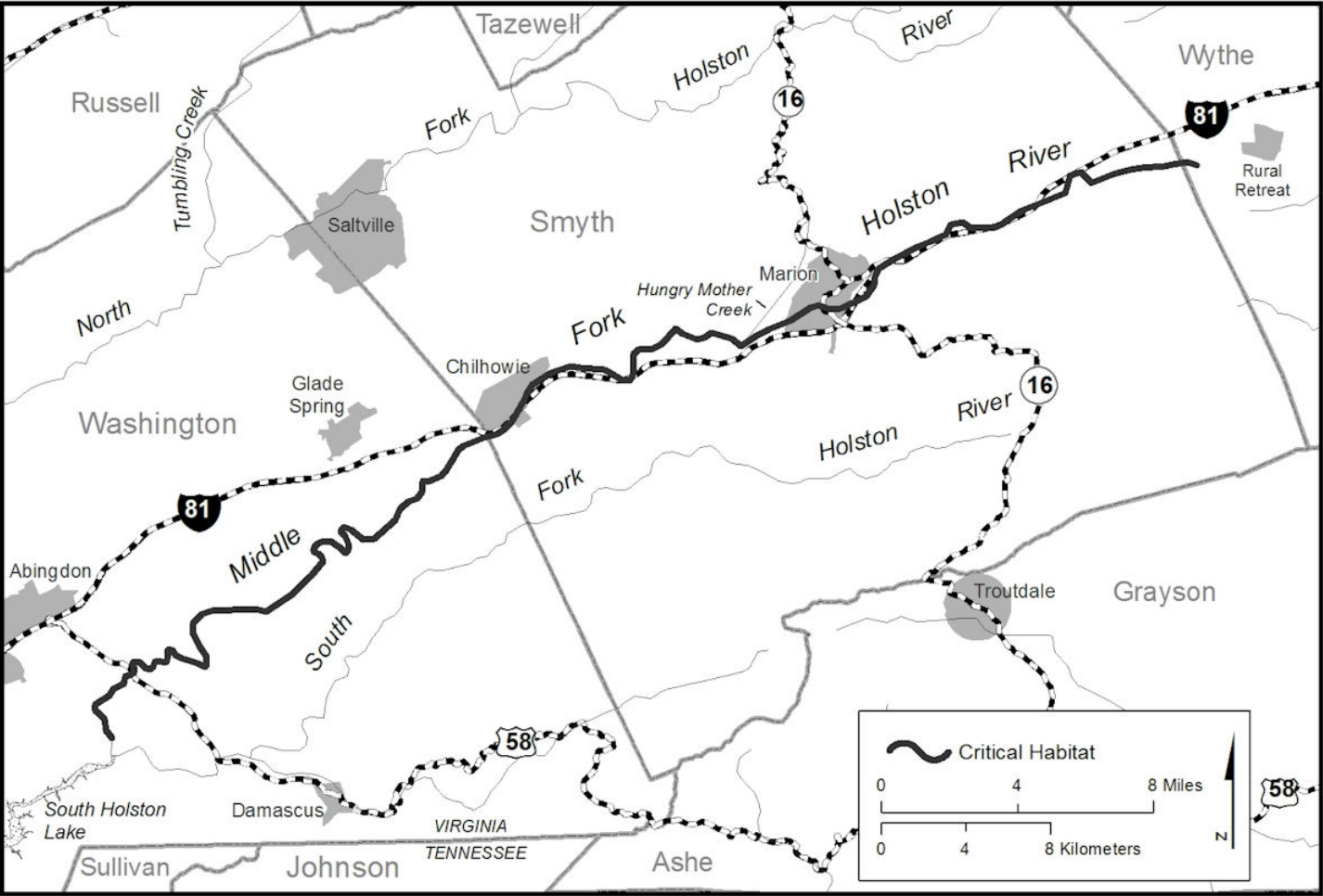


(7) Unit SP2: Middle Fork Holston River, Washington, Smyth, and Wythe Counties, Virginia.

(i) The unit includes approximately 89 rkm (55 rmi) of the Middle Fork Holston River from its inundation at South Holston Lake (-81.90427, 36.66338) in Washington County, VA, upstream to its headwaters (-81.31345, 36.88666) in Wythe County, VA.

(ii) Map of Unit SP2 follows:

Unit SP2: Middle Fork Holston River, Slabside Pearlymussel Critical Habitat

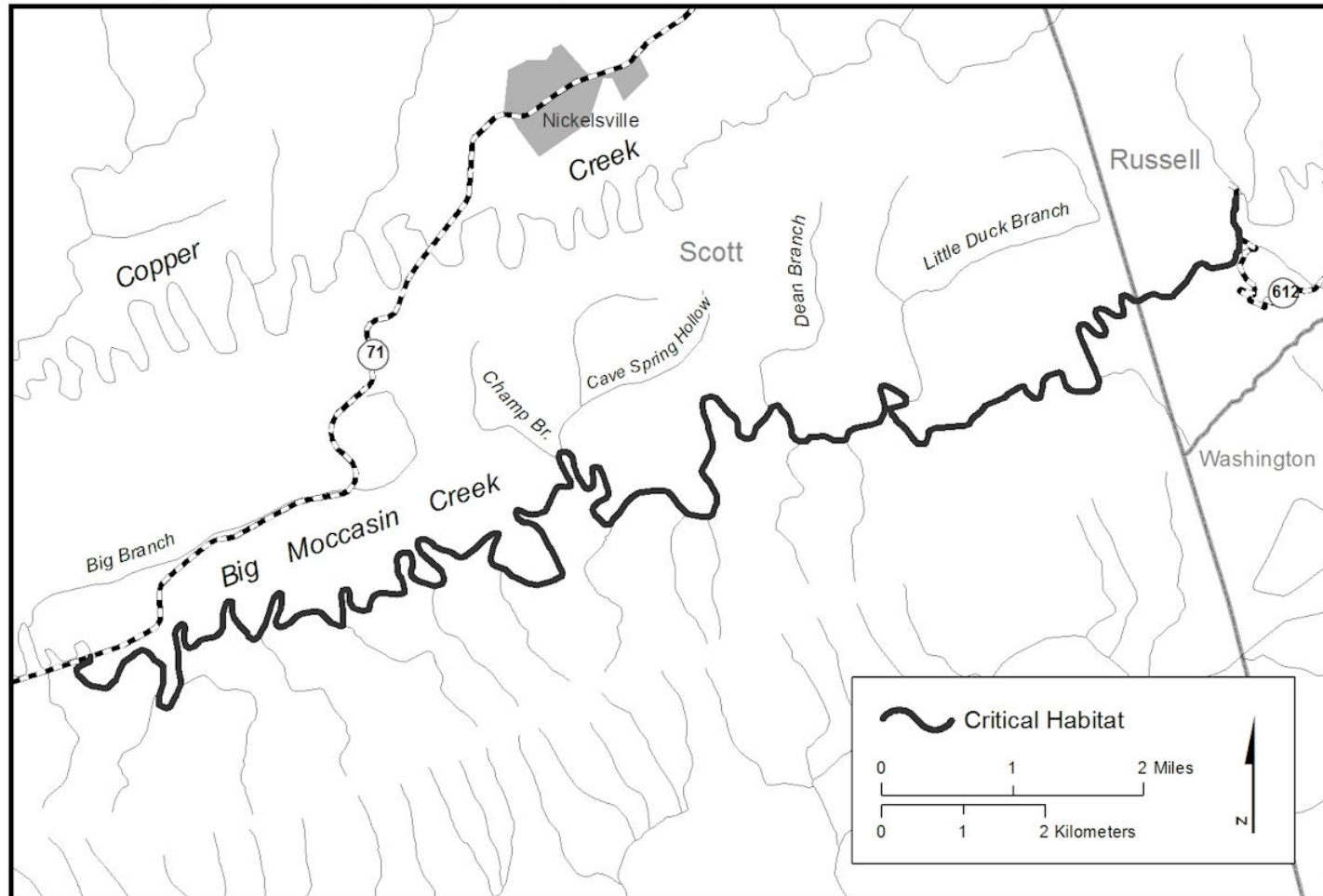


(8) Unit SP3: Big Moccasin Creek, Scott and Russell Counties, Virginia.

(i) The unit includes approximately 33 rkm (21 rmi) of Big Moccasin Creek from the Highway 71 Bridge crossing (-82.48361, 36.69109) in Scott County, VA, upstream to the Route 612 Bridge crossing (-82.32348, 36.73740) near Collinwood in Russell County, VA.

(ii) Map of Unit SP3 follows:

Unit SP3: Big Moccasin Creek, Slabside Pearlymussel Critical Habitat

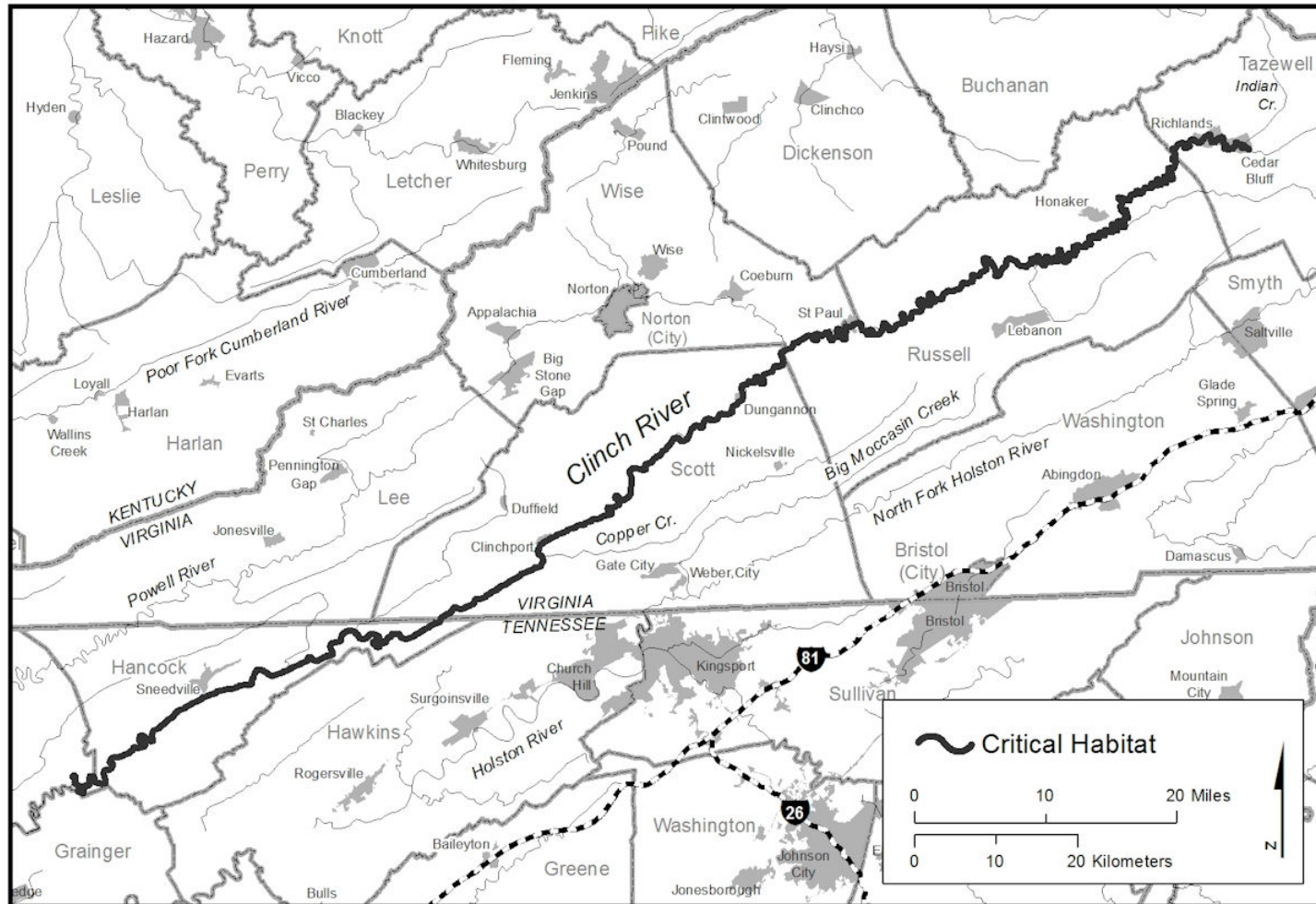


(9) Unit SP4: Clinch River, Hancock County, Tennessee, and Scott, Russell, and Tazewell Counties, Virginia.

(i) The unit includes approximately 263 rkm (163 rmi) of the Clinch River from rkm 255 (rmi 159) immediately below Grissom Island (-83.40106, 36.43081) in Hancock County, TN, upstream to its confluence with Indian Creek near Cedar Bluff (-81.74999, 37.07995), Tazewell County, VA.

(ii) Map of Unit SP4 follows:

Unit SP4: Clinch River, Slabside Pearlymussel Critical Habitat

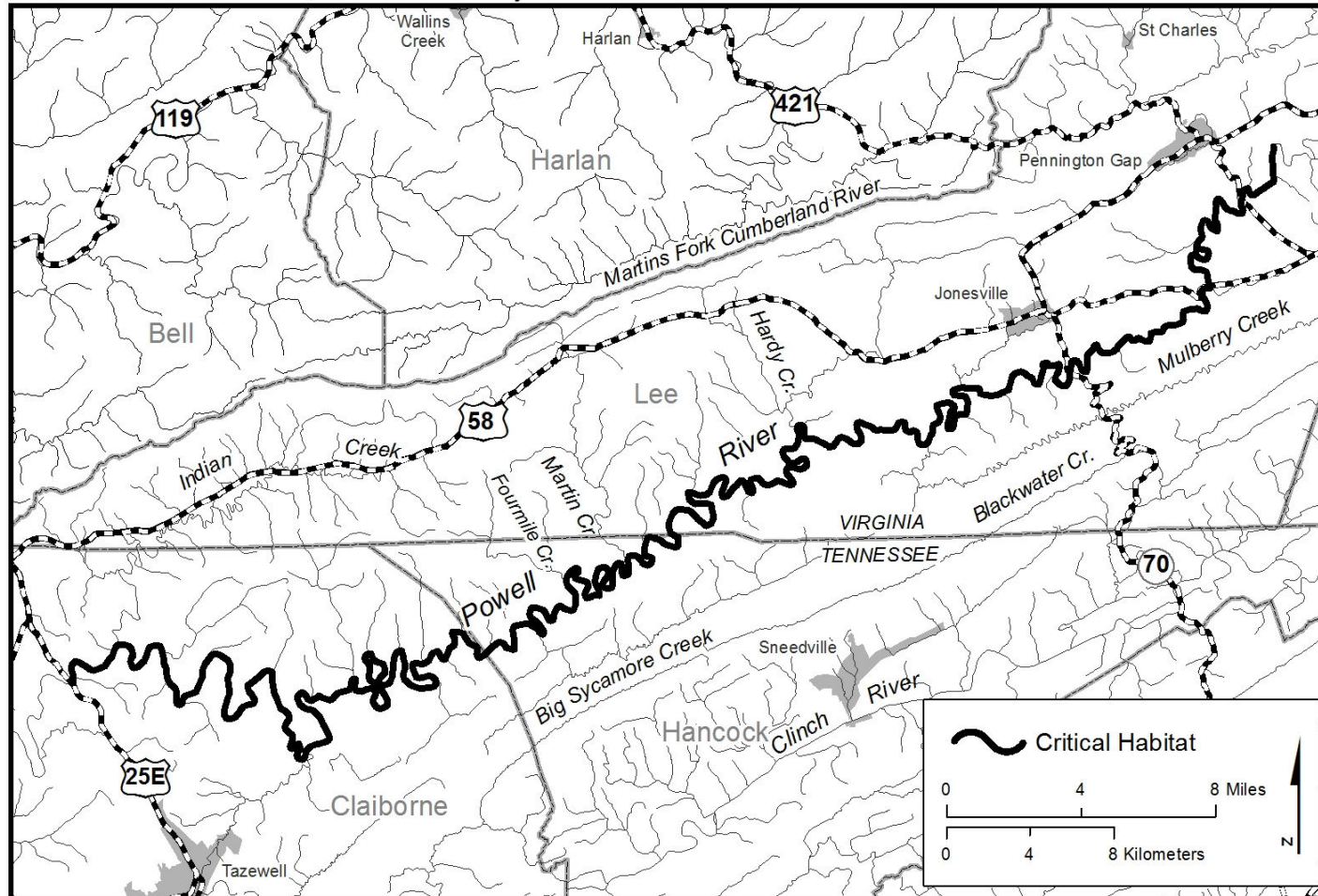


(10) Unit SP5: Powell River, Claiborne and Hancock Counties, Tennessee, and Lee County, Virginia.

(i) The unit includes approximately 153 rkm (95 rmi) of the Powell River from the U.S. 25E Bridge (-83.63102, 36.54143) in Claiborne County, TN, upstream to rkm 256 (rmi 159) (-82.98111, 36.75730, upstream of Rock Island in the vicinity of Pughs) in Lee County, VA.

(ii) Map of Unit SP5 follows:

Unit SP5: Powell River, Slabside Pearlymussel Critical Habitat

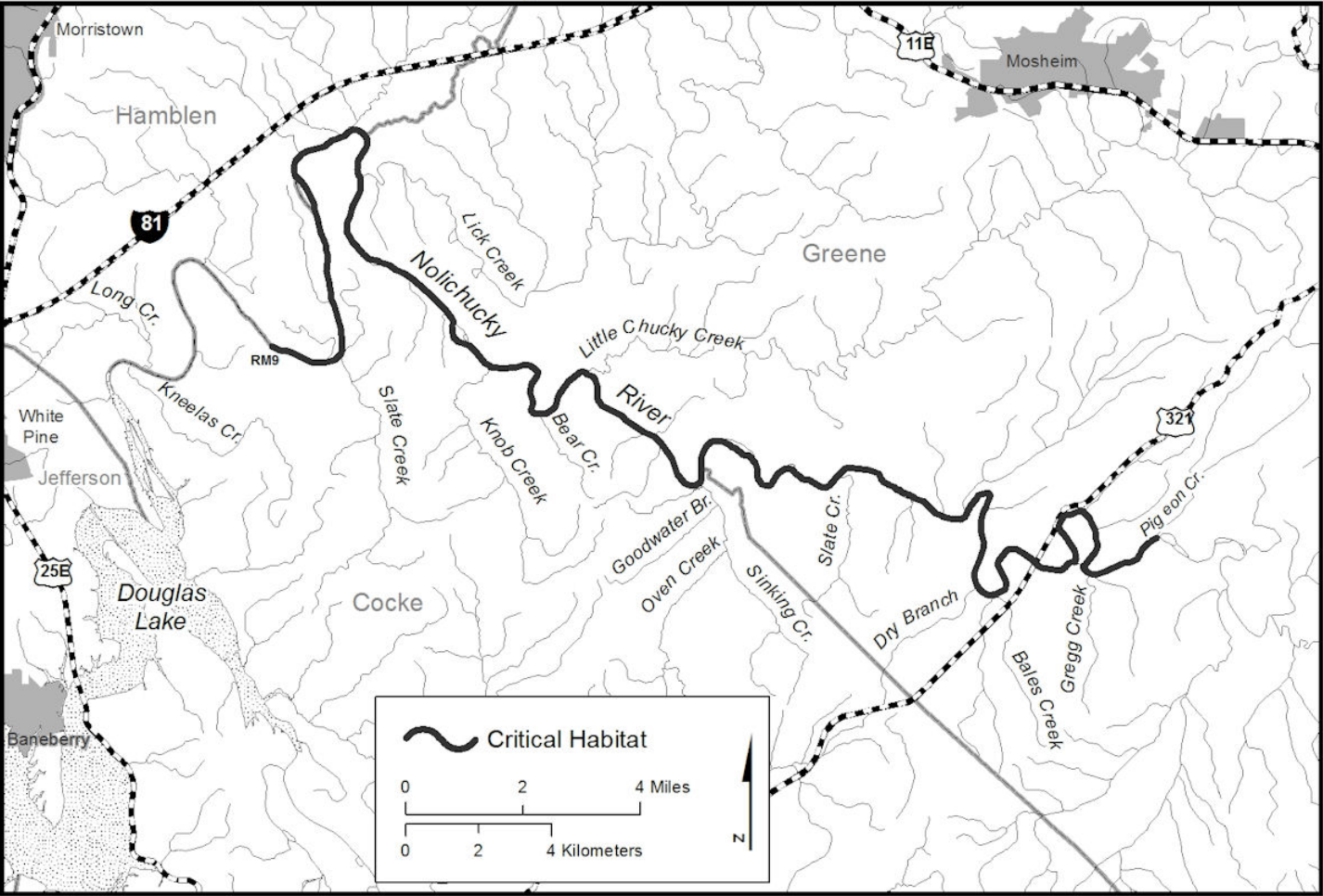


(11) Unit SP6: Nolichucky River, Cocke, Hamblen, and Greene Counties, Tennessee.

(i) The unit includes approximately 52 rkm (32 rmi) of the Nolichucky River from rkm 14 (rmi 9), approximately 0.6 rkm (0.4 rmi) upstream of Enka Dam (-83.19630, 36.12970), where it divides Hamblen and Cocke Counties, TN, upstream to its confluence with Pigeon Creek, just upstream of the Highway 321 Bridge crossing (-82.92926, 36.07545), in Greene County, TN.

(ii) Map of Unit SP6 follows:

Unit SP6: Nolichucky River, Slabside Pearlymussel Critical Habitat

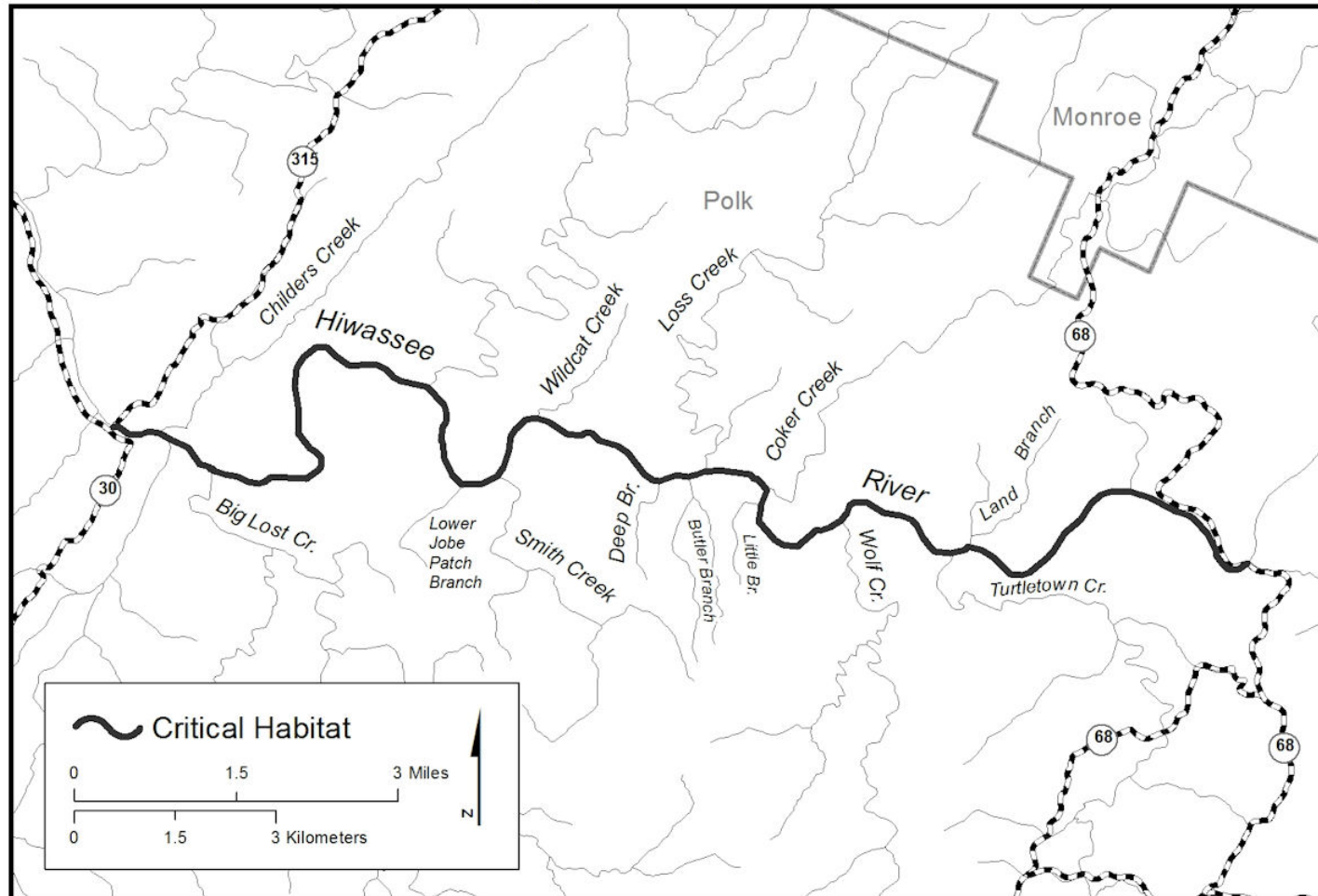


(12) Unit SP7: Hiwassee River, Polk County, Tennessee.

(i) The unit includes approximately 24 rkm (15 rmi) of the Hiwassee River from the Highway 315 Bridge crossing (-84.50234, 35.18875) upstream to the Highway 68 Bridge crossing (-84.31728, 35.16811) in Polk County, TN.

(ii) Map of Unit SP7 follows:

Unit SP7: Hiwassee River, Slabside Pearlymussel Critical Habitat



(13) Unit SP8: Sequatchie River, Marion, Sequatchie, and Bledsoe Counties, Tennessee.

(i) The unit includes approximately 151 rkm (94 rmi) of the Sequatchie River from the Highway 41, 64, 72, 2 Bridge crossing (-85.60583, 35.06576) in Marion County, TN, upstream to the Ninemile Cross Road Bridge crossing (-85.08304, 35.69162) in Bledsoe County, TN.

(ii) Map of Unit SP8 follows:

Unit SP8: Sequatchie River, Slabside Pearlymussel Critical Habitat

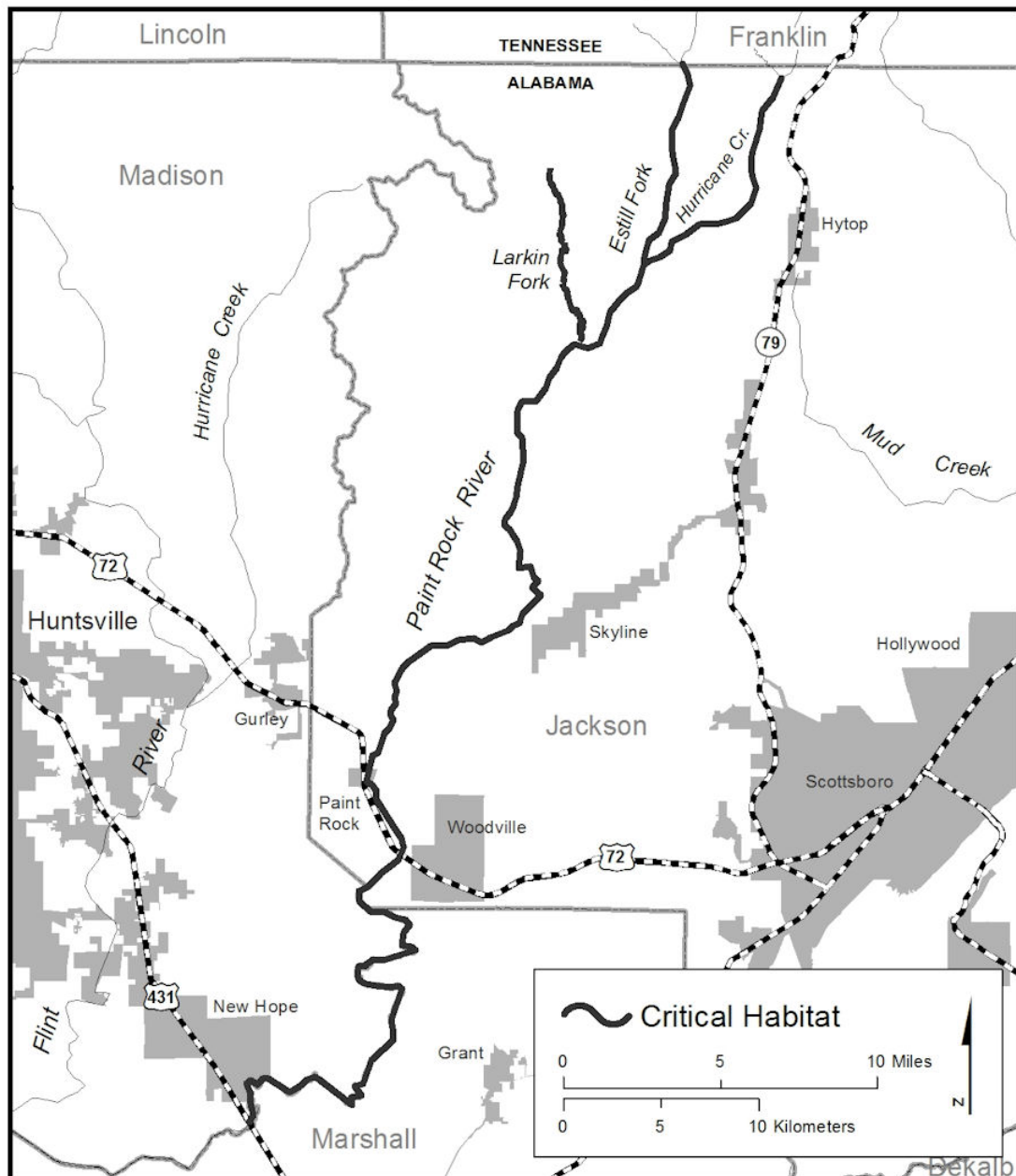


(14) Unit SP9: Paint Rock River, Madison, Marshall, and Jackson Counties, Alabama.

(i) The unit includes approximately 86 rkm (53 rmi) of the Paint Rock River from the Highway 431 Bridge crossing (-86.39109, 34.49926) along the Madison and Marshall County line, AL, upstream to the confluence of Estill Fork and Hurricane Creek in Jackson County, AL (-86.17048, 34.89813). The unit includes approximately 11 rkm (7 rmi) of Larkin Fork from its confluence with the Paint Rock River (-86.20833, 34.86218) upstream to its confluence with Bear Creek (-86.22512, 34.94205) in Jackson County, AL; approximately 13 rkm (8 rmi) of Estill Fork from its confluence with the Paint Rock River (-86.17048, 34.89813) upstream to its confluence with Bull Run (-86.15283, 34.99118) in Jackson County, AL; and approximately 16 rkm (10 rmi) of Hurricane Creek from its confluence with the Paint Rock River (-86.17048, 34.89813) upstream to its confluence with Turkey Creek (-86.09441, 34.98370) in Jackson County, AL.

(ii) Map of Unit SP9 follows:

Unit SP9: Paint Rock River, Slabside Pearlymussel Critical Habitat

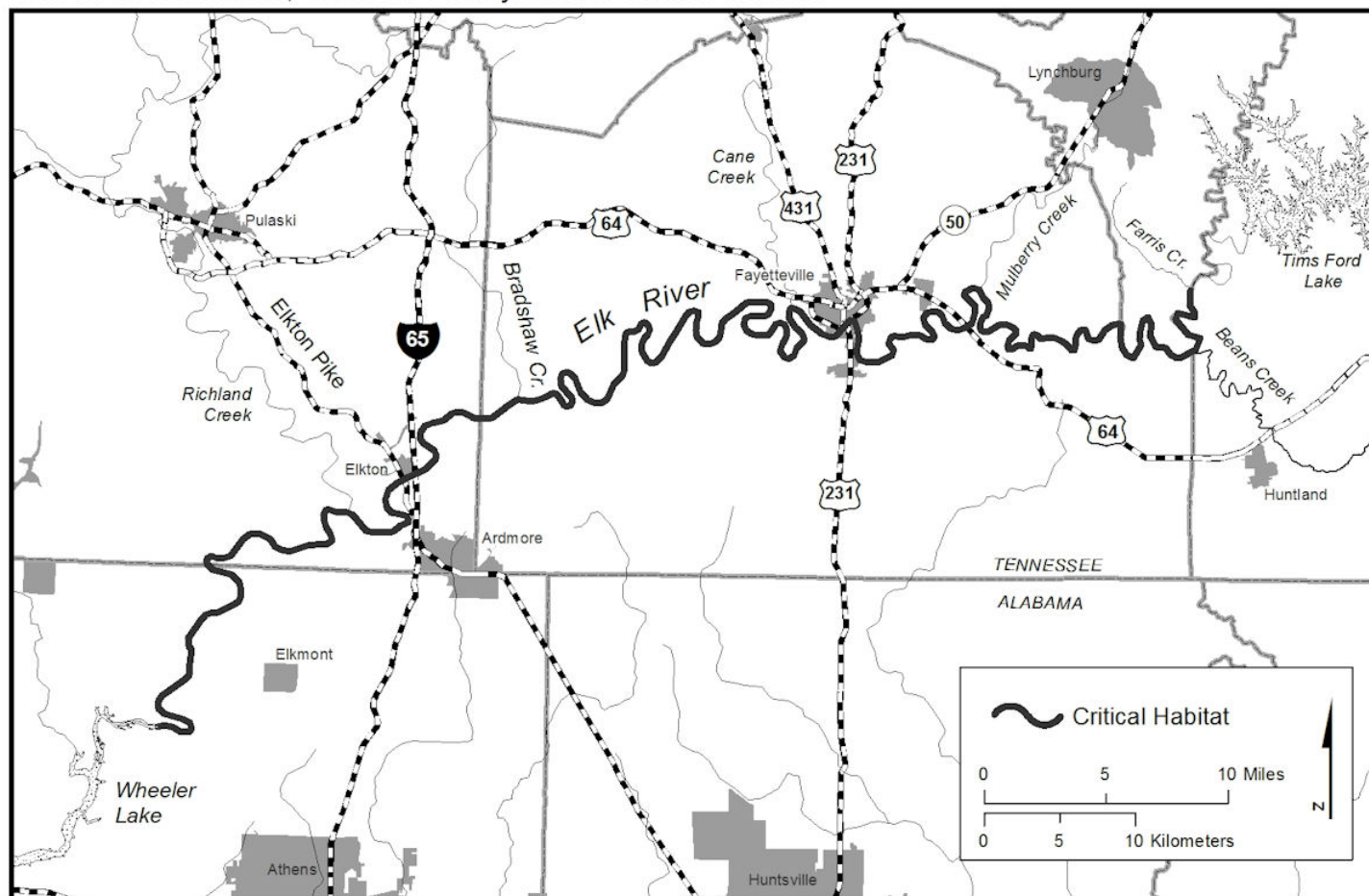


(15) Unit SP10: Elk River, Limestone County, Alabama, and Giles, Lincoln, Franklin, and Moore Counties, Tennessee.

(i) The unit includes approximately 164 rkm (102 rmi) of the Elk River from its inundation at Wheeler Lake (-87.06503, 34.89788) in Limestone County, AL, upstream to its confluence with Farris Creek (-86.31996, 35.16288) at the dividing line between Franklin and Moore Counties, TN.

(ii) Map of Unit SP10 follows:

Unit SP10: Elk River, Slabside Pearlymussel Critical Habitat

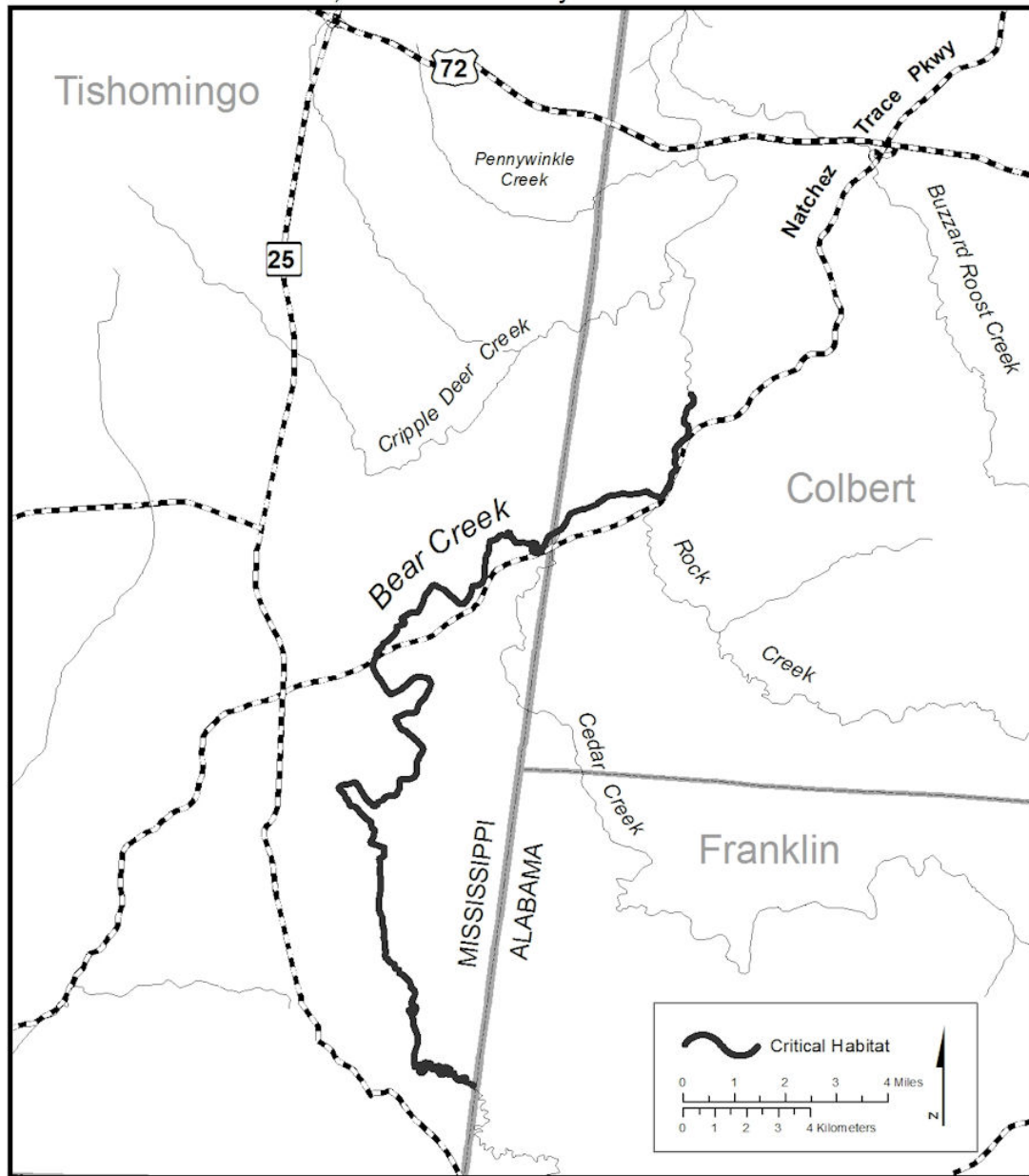


(16) Unit SP11: Bear Creek, Colbert County, Alabama, and Tishomingo County, Mississippi.

(i) The unit includes approximately 42 rkm (26 rmi) of Bear Creek from its inundation at Pickwick Lake at rkm 37 (rmi 23) (-88.08373, 34.68909) in Colbert County, AL, upstream through Tishomingo County, MS, and ending at the Mississippi-Alabama State line (-88.15388, 34. 49139).

(ii) Map of Unit SP11 follows:

Unit SP11: Bear Creek, Slabside Pearlymussel Critical Habitat

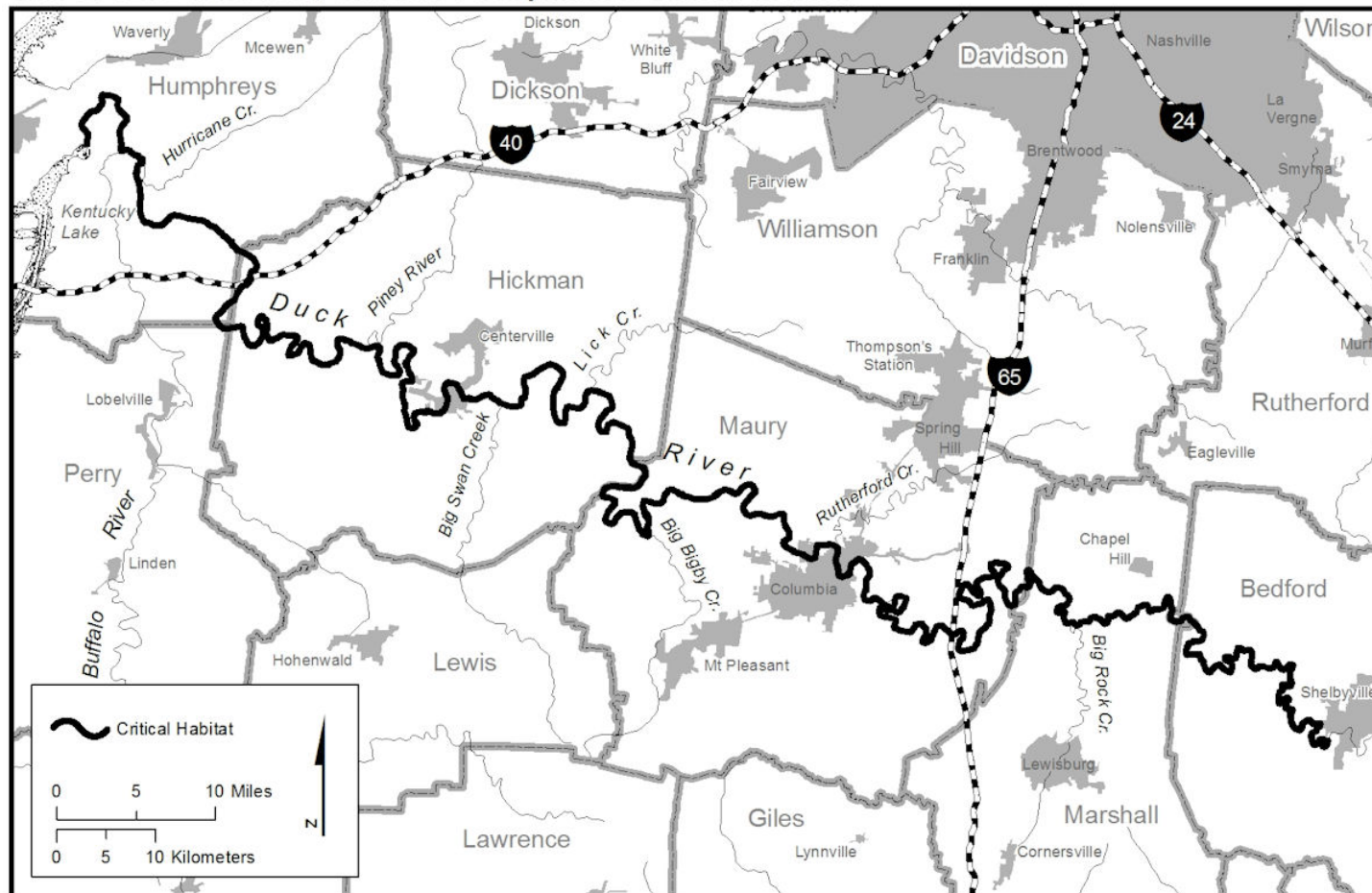


(17) Unit SP12: Duck River, Humphreys, Perry, Hickman, Maury, Marshall, and Bedford Counties, Tennessee.

(i) The unit includes approximately 348 rkm (216 rmi) of the Duck River from its inundation at Kentucky Lake (-87.88011, 36.00244) in Humphreys County, TN, upstream to its confluence with Flat Creek (-86.48778, 35.47209) near Shelbyville in Bedford County, TN.

(ii) Map of Unit SP12 follows:

Unit SP12: Duck River, Slabside Pearlymussel Critical Habitat

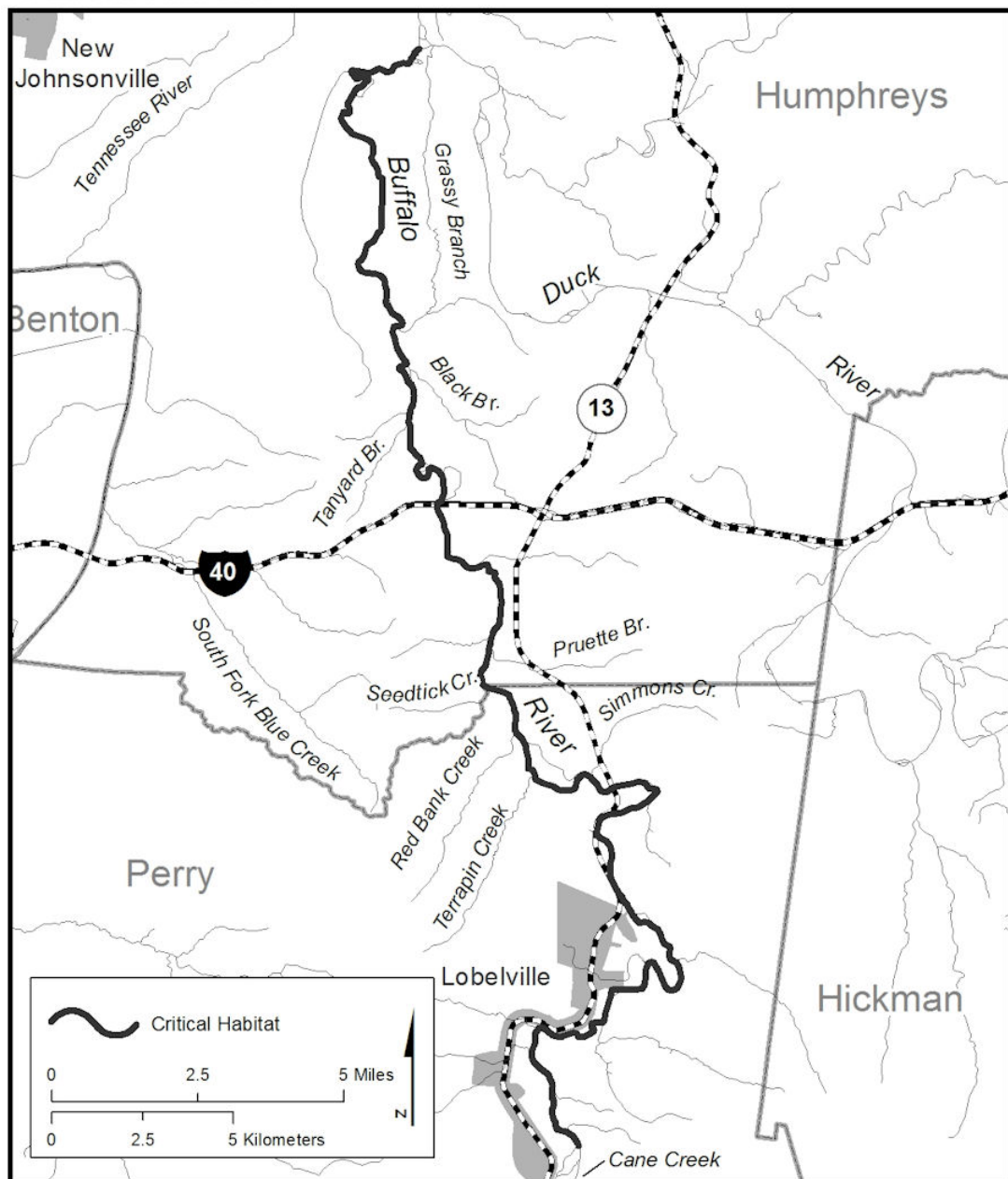


(18) Unit SP13: Buffalo River, Humphreys and Perry Counties, Tennessee.

(i) The unit includes 50 rkm (31 rmi) of the Buffalo River from its confluence with the Duck River (-87.84261, 35.99477) in Humphreys County, TN, upstream to its confluence with Cane Creek (-87.78718, 35.72298) in Perry County, TN.

(ii) Map of Unit SP13 follows:

Unit SP13: Buffalo River, Slabside Pearlymussel
Critical Habitat



* * * * *

Dated: September 17, 2013

Signed: Michael J. Bean

Acting Principal Deputy Assistant Secretary for Fish and Wildlife and Parks

Billing Code 4310-55-P

[FR Doc. 2013-23357 Filed 09/25/2013 at 8:45 am; Publication Date: 09/26/2013]